

Curt
JANUARY 1919 ~ NO 156

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A·H·HITCHCOCK
1220-1235 Caxton Building
Chicago

Type T Heavy Duty RELIANCE MOTORS *Direct Current*

General-service Motors

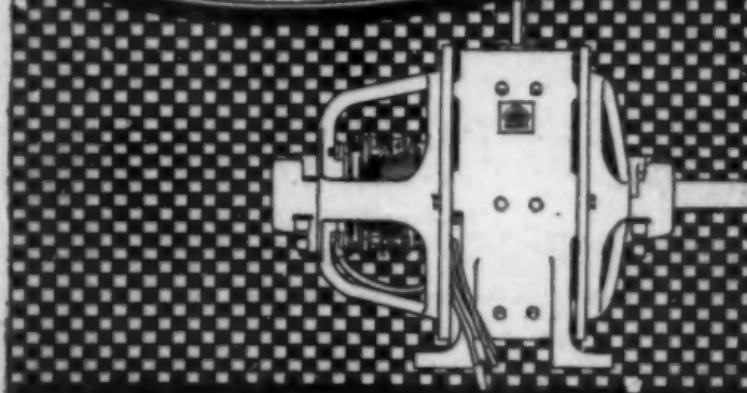
Type T Reliance Motors are designed for heavy general service purposes.

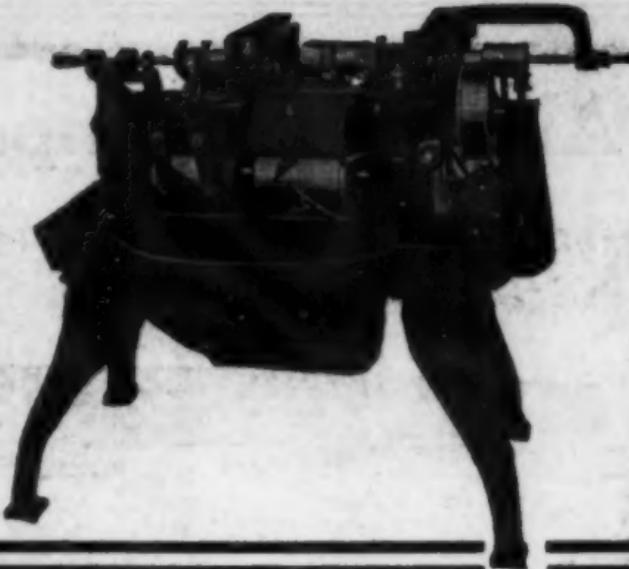
They are furnished in both the constant speed and adjustable speed types. Speed adjustments are obtained by field resistance control.

The details of these motors are described with 39 illustrations in our Bulletin 2014.

Reliance
Electric & Engineering Co.
1050 Euclid Avenue Cleveland, Ohio

BRANCHES:
New York Philadelphia Pittsburgh
Chicago





Built particularly for STUDS

The NAMCO Automatic Stud Threader is specialized for rapid and accurate threading.

Feeding blanks from the magazine and extracting the threaded pieces are accomplished at the same time. Non-productive movements are further eliminated by using NAMCO Automatic Opening and Closing Dies.

All non-cutting movements are quick and positive. Idle time is reduced to the minimum, and one man takes care of three machines.

For the lowest cost per piece use NAMCO Stud Threaders. Let us prove it. Estimates from samples.

Capacities $\frac{1}{4}$ " to 1" inclusive.

THE NATIONAL ACME CO.

NEW ENGLAND PLANT
WINDSOR, VT.

Cleveland, O.

CANADIAN SCREW PLANT
MONTREAL

Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio

Alert Roller Grip Stub Arbors



Be up to the minute! Get a 25% increased production! Adopt ROLLER GRIP STUB ARBORS for your work. Don't waste your time driving Mandrels in and out of your work, let a ROLLER GRIP do it. Forget your arbor press. Stub Arbors made in all sizes.

Send for circulars (SA).

Alert Tool Company

237 North 6th St.,

Philadelphia, Pa.



A recent meeting of the Steel Treating Research Society at Detroit was devoted to a study of Sand Blasting.

The lecturer was the "Flint Shot Man." He showed slides to illustrate the remarkable progress of the sand blasting art.

To those heat-treating superintendents, foremen, engineers and experts he gave some new ideas for the use of the sand blast on raw and heat-treated materials to remove mill and furnace scale.

Figures given showing saving of tools and dies on steel thus sand-blasted were little short of startling.

Much of the information contained in his lecture, reflecting the practices in over 60 great American plants, is contained in our book—*"Little Journeys of The Flint Shot Man"*—send for it.

United States Silica Company
1941 Peoples Gas Bldg., Chicago, Ill.

Cincinnati Planers and Boring Mills

Are Heavy-Production, Big-Economy Tools

Cincinnati Planers

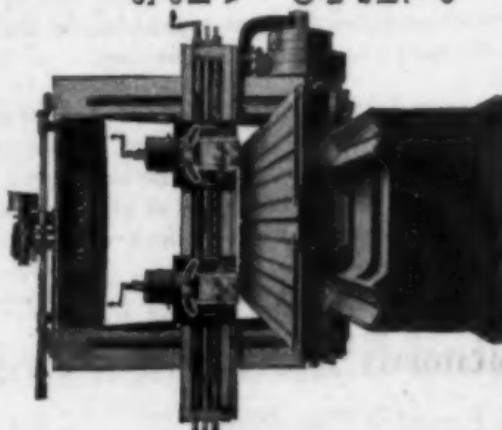
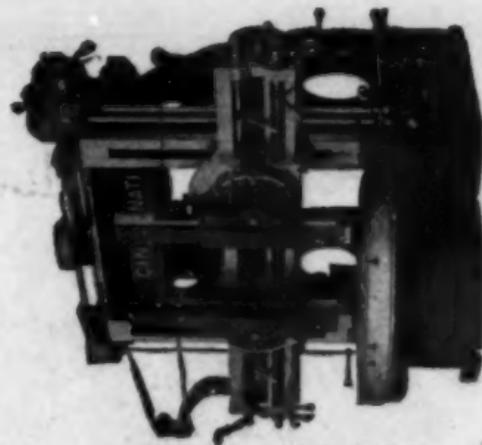
Variable Speeds } Equal
Rapid Operation } Big Production
Rigid Construction } Great Economy

Sizes 22⁸ to 48⁸ are regularly furnished with our patent Tu-speed Drive. Our Motor-Driven Planers provide 10 cutting speeds, with constant or variable return.

Boring Mills

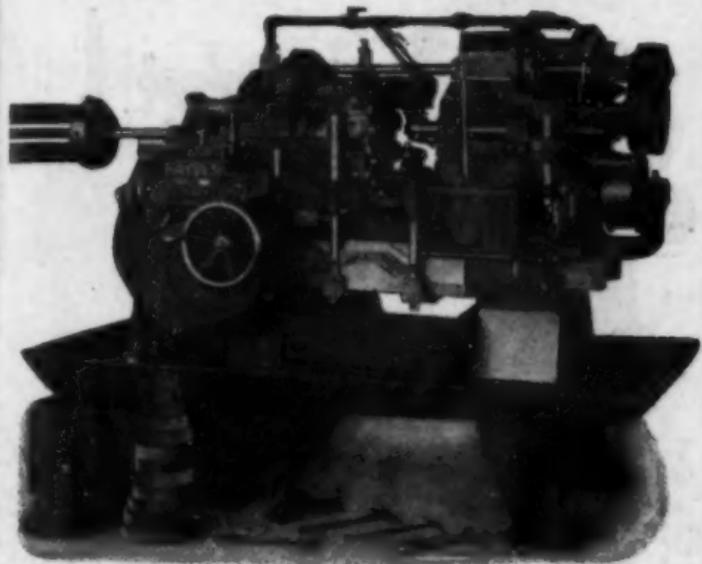
Cincinnati Rapid Production Boring Mills of the spur gear type are made in sizes 8, 10 and 12 ft. Boring and Turning Mills of the bevel gear type are furnished 5, 6 and 7 ft. These versatile tools are invaluable for machining work of large diameters.

Write for specifications



THE CINCINNATI PLANER CO., Cincinnati, Ohio, U. S. A.

Cincinnati Five Spindle Automatic Screw Machine



Why not let this machine make money for you?

Actual time per piece, 2½ to 36 seconds.

This up-to-the-minute machine has 16 spindle speeds and 20 changes of time to make one piece; nine tools can be operated together; starting and stopping lever on each side; four cross slides for circular tools—five longitudinal tool slides for turning, drilling, etc.

These are only a few of the 48 Superior Features incorporated in its design for insuring accuracy, convenience and a generous output—in other words, for making money.

Write for Catalog, which explains fully

Cincinnati Automatic Machine Co.
Oakley, Cincinnati, Ohio

From 16 to 30-Inch
G-K Engine Lathes



**G-K 16" and 18"
Heavy Quick Change**

Take a high-grade lathe of the best quality, and add "G-K Betterments," and you have a G-K Engine Lathe.

"G-K Betterments" mean a number of practical things, for greater convenience and accuracy, for taking heavier cuts, for turning out more work.

The bed is constructed and reinforced to absorb all torsions. The headstock is better braced. The long tailstock marks a decided advance—stands all the power, without strain, that can be delivered. Headstock and tailstock are back of center line of bed, always bringing tool pressure inside the V's.

These are samples of "G-K Betterments"—all real improvements. The Catalog tells of more, and describes each one fully.

Write for Catalog, showing "G-K Betterments"

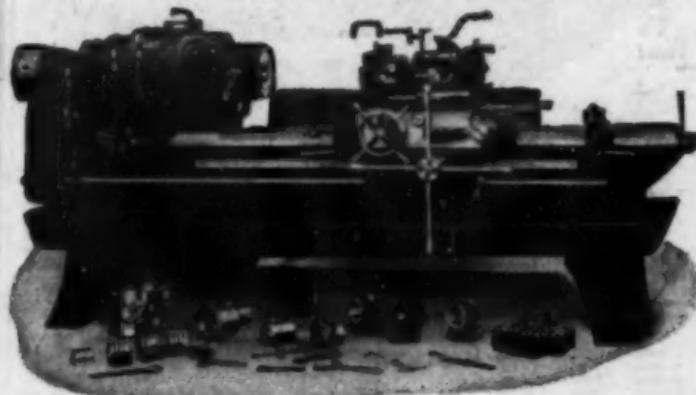
The Greaves-Klusman Tool Co.
Cincinnati, Ohio, U. S. A.

CINCINNATI-ACME

**Flat
Turret
Lathe**

The Most Rigid Turret Lathe Made

For Both Bar and Chucking Work



3½" x 36" Cincinnati-Acme equipped for bar work

This machine has solved many a knotty problem in the machining of small parts, and has made some most enviable production records.

We would like to tell you about them, and at the same time take up with you the matter of its adaptability to *your* requirements.

It is a rapid and accurate producer of an unusual range of both bar and chucking work, and you may find it to be just what you need to insure the desired output at a satisfactory cost.

*We shall be delighted to discuss it with you
No harm in asking, and there's no obligation*

**The Acme Machine Tool Co.
Cincinnati, Ohio, U. S. A.**

Rockford Horizontal Drilling, Boring & Tapping Machine

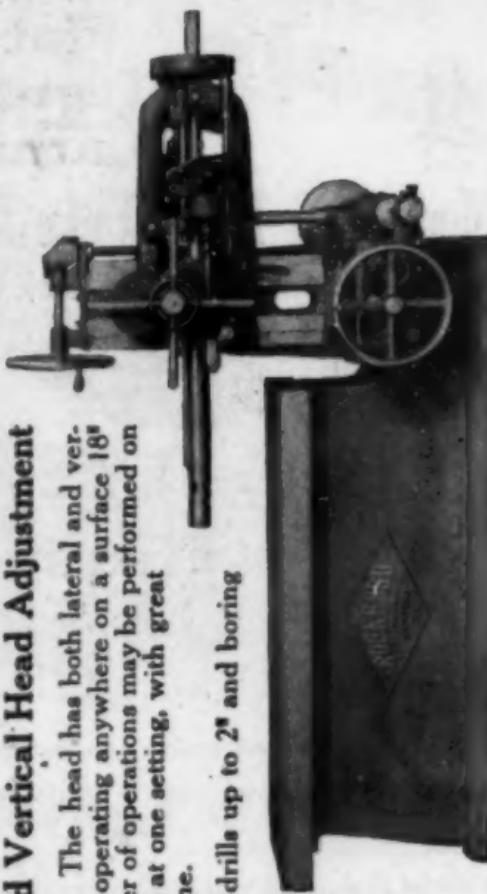
With Lateral and Vertical Head Adjustment

The table is stationary. The head has both lateral and vertical adjustment, the spindle operating anywhere on a surface 18" high by 36" wide. A number of operations may be performed on heavy and odd shaped work at one setting, with great accuracy and economy of time.

Capacity for high speed drills up to 2" and boring up to 6". Considerably larger tools may be used by avoiding the coarse feeds.

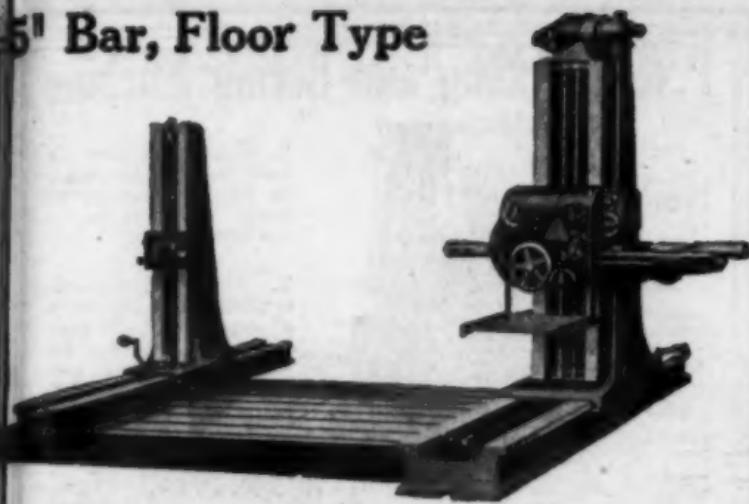
Made extra heavy and durable. A choice of six driving combinations.

*Write for complete
specifications*



THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois

5" Bar, Floor Type



A New horizontal boring mill that's bigger and better

ASUPERB TOOL of ultra-modern convenience and productiveness. In general design it conforms to the latest and best of machine shop practice, but in addition we have embodied a number of original improvements which easily put this "big fellow" in the front rank.

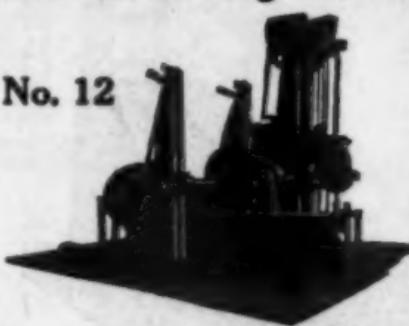
It is thoroughly complete for the performing of any or all of the necessary operations, such as boring, drilling, milling, tapping, threading, facing, turning and slotting. It works rapidly and accurately on jobs of every size—the floor plate measures 8'x12'. It's a real cost reducer.

*We have printed a complete description in a
handsome Booklet. Send for your copy*

**Giddings & Lewis Manufacturing Co.
Fond du Lac, Wis., U. S. A.**

P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

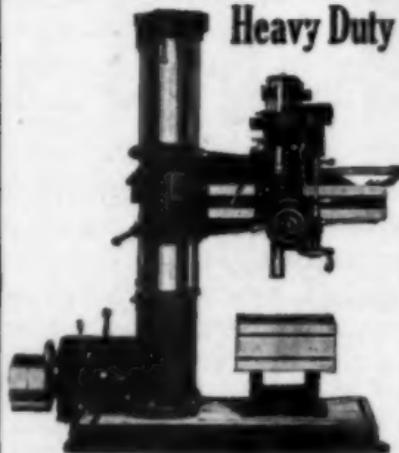
A. C. Current, 12 to 542 R. P. M.
D. C. Current, 10 to 445 R. P. M.

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

Pawling & Harnischfeger Company
Milwaukee, Wisconsin

It will be worth your while to carefully consider these distinctive features of the

Heavy Duty Mueller Radial Drill



Patented Stationary Column.

Combination Positive and Friction Feed.

Effective, yet extremely simple control.

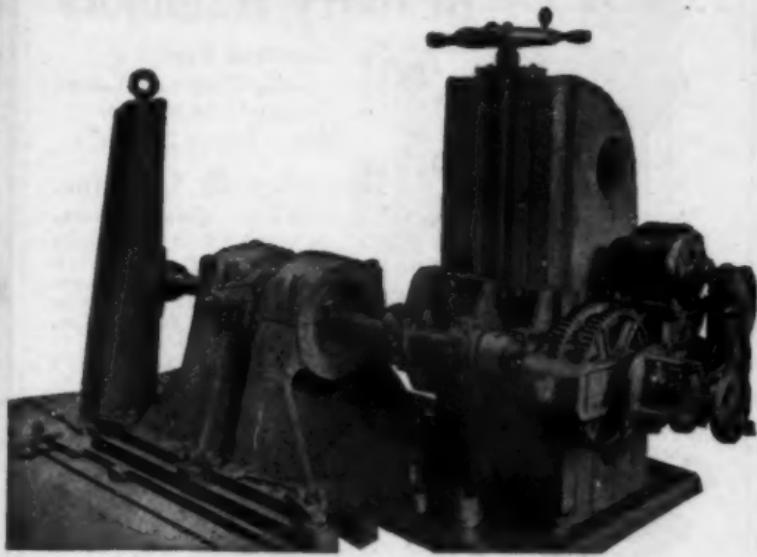
Combination Low and High speed reverse for backing out taps.

And many others which this space will not permit us to enumerate.

The Mueller Machine Tool Co.
Radial Drills and Lathes

Cincinnati, Ohio

A Shop Picture



Pedrick Column Boring Machine

just as it appears at work without giving the artist a chance to make it look prettier.

It's all there, 3 feeds automatic, quick hand movement of bar, motor drive with variable gearing for different speeds, strong, powerful and accurate.

You will search in vain for complication or a lot of elaborate details. These parts were purposely omitted. Simplicity, moderate price and all the mechanism necessary to do the work are the features you will find.

*For further information, we refer you to our circular
Why don't you ask for it?*

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Mfrs. Portable Boring Bars, Crank Pin Machines, Pipe Benders,
Portable Millers, etc.



Beaudry Hammers

For General Forging

Saves Fuel, Time and Labor.
Cuts Forging Costs in Two.

Belt or Motor Driven

Beaudry & Co., Inc.

141 Milk St., Boston, Mass.

SALES AGENTS—The Machine Tool Engineering Co., Inc., New York City; Brown & Zortman Machinery Co., Pittsburgh, Pa.; W. M. Pattison Supply Co., Cleveland, O.; Eccles & Smith Co., San Francisco and Los Angeles, California; Hallidie Mchly. Co., Inc., Seattle, Wash.; The Portland Mchly. Co., Portland, Ore.; Alfred Herbert, Ltd., Coventry, Eng., London, Paris, Calcutta, Yokohama; Sherritt & Steer Co., Philadelphia, Pa.; The English Tool & Supply Co., Kansas City, Mo.; The E. L. Essley Mchly. Co., Chicago, Ill. and Milwaukee, Wis.



It's Portable

"As You Like It"

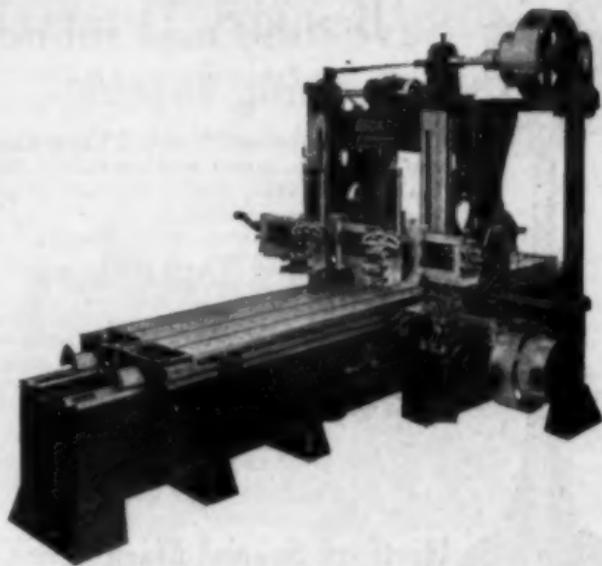
IF you like the music of the hammer on the anvil, as the smithy turns out his "bit" of tool dressing, forging, etc., each day—we admit it sounds like old times—very old. We would merely suggest that a BARR Pneumatic Hammer with one man, will do many times the work, and it will sound like business.

If you like to see equipment crowded with work—we admit it looks good—but is it?

We would only mention that a Barr Pneumatic Hammer will relieve your larger hammers of the light work, increasing their production in an inexpensive way.

You need this tool! Bulletin 10H.





36"x36"x12'
Bickett Metal Planer

THIS PLANER is built in the following table lengths: 8, 10, 12, 14 and 16 feet. The Planer is equipped with one Head on the cross rail, equalized Table Lubrication, Aluminum Driving Pulley and necessary Wrenches. Second Head on rail and Right and Left-hand Side Heads quoted on request.

The arrangement for the belted motor drive as illustrated is so arranged that motor can be attached either by flexible coupling or by set of gearing. Flexible coupling and gearing are furnished at an extra cost.

You will note in our countershaft mounted on top of the housing of our planer, in addition to its very rigid construction with a separate pedestal extending to the floor, it has means for adjustment to tighten the belts as they stretch under strain, also means for adjusting countershaft in proper mesh with the motor gear. This feature we believe to be novel and substantially important. The shaft bearings are of ring oiling design.

The style motor and speed of same is left optional to the purchaser of the planer, as we furnish no electrical equipment, except when ordered, for which we can quote upon request.

The Bickett Machine & Mfg. Co.
Cincinnati, Ohio, U. S. A.



Save time and money in turning tapers

Those who have used Hartford Taper Gages would not turn tapers without them. They regard them as one of their standard, matter-of-course measuring devices.

Hartford Taper Gages

should have a place in every shop and department where tapers are turned. You would never be without them if you were posted as to how these inexpensive devices really expedite work.

*May we post you?
Just say the word.*

Hartford Special Machinery Co.
285 Homestead Ave., Hartford, Conn.

The Amplifying Gauge

With our Amplifying Gauge you can throw away 75 per cent of your snap gauges, which, at best, leave you to guess how much over or under size a piece may be.

The Amplifying Gauge shows every inaccuracy in ten-thousandths of an inch, replacing guess-work with certainty.

Parts of any shape, when the Gauge is set with a model or standard, may be accurately gauged as fast as the workman can handle them.

Used with satisfaction by the U. S. Government and in large automobile plants.

Write for Illustrated Bulletin

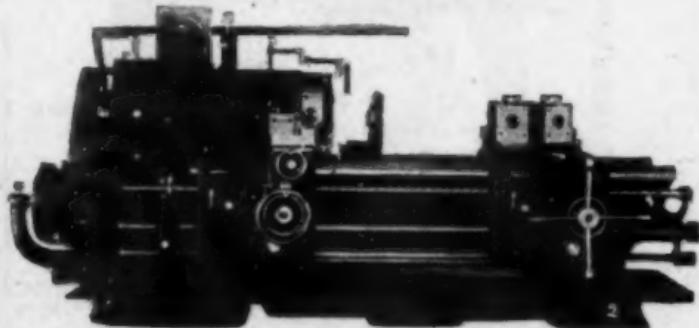


THE NORTH SIDE TOOL CO., Dayton, Ohio

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



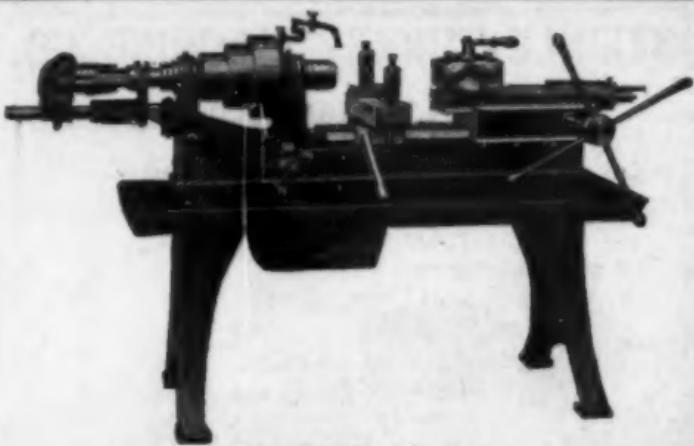
Standard Steinle 24" Full Swing Side Carriage Turret Lathe with 6 $\frac{1}{4}$ " Hole through Spindle as Arranged with Motor Drive

The machine shown above is the superior of any heavy duty turret lathe on the market as a general purpose machine. It has exclusive features that are invaluable and permit of better tooling arrangements than can be applied to any other machine of this character, thereby greatly increasing efficiency in point of quality and quantity of production.

Manufacturers of tractors will find this Steinle 24" Full Swing Side Carriage Turret Lathe a great producer of such parts as cylinders, where same are cast singly, pistons, piston rings, fly wheels, gear blanks, sprockets, axle housings, differential cases, hubs, etc.

Many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines are counted among our customers, and repeat orders from practically all have demonstrated the gratifying results obtained from the use of our machines.

On receipt of your drawings we shall be pleased to submit production estimates and full information.



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

No. 2 { $1\frac{1}{16}$ " Wire Feed Capacity, Plain Head
 { $1\frac{9}{16}$ " Hole Through Spindle.

No. 3 { $1\frac{5}{16}$ " Wire Feed Capacity, Plain Head
 { $1\frac{13}{16}$ " Hole Through Spindle.

No. 4 { $1\frac{1}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{5}{16}$ " Hole Through Spindle.

No. 5 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{9}{16}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

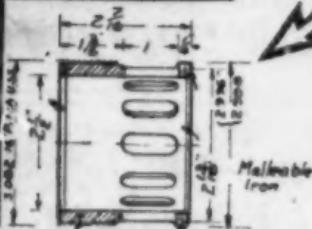
Manufactured By

Smurr & Kamen Company
328-330 N. Albany Ave., Chicago, Ill.

THE TILTED TURRET

ACLEAR TRACK THE STOCK.

*This Job Complete in
2½ Minutes*



The TILTED TURRET MACHINES

are accurate and productive. Fifteen years' of thoroughly tested service. A size for every class of manufacturing.

Ask the User

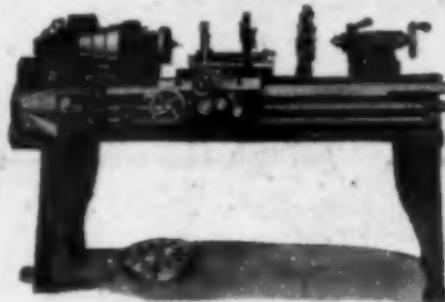
Catalog "H"—It's Free

WOOD TURRET MACHINE CO.

BRAZIL, INDIANA, U.S.A.

The "Filsmith" Modern Lathe

Has Great Power for Its Rated Swing



3-Step Case

Double Back Gear

Q. C. Gear Box

Any Length Bed

14" and 16" Swing

"Filsmith" quality means superior workmanship, the very best materials—plus some new features that aid production. Write for the specifications of this dependable tool.

PHILIP SMITH MFG. CO., SIDNEY, O.

Big Capacity for Plain Work

Fultons Satisfy Manufacturers

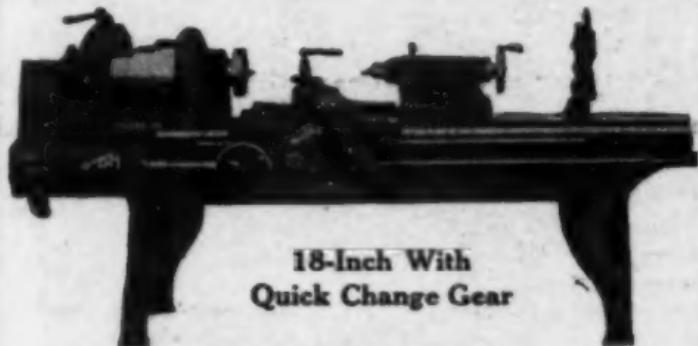


18 $\frac{1}{4}$ "x7"—Friction Head

A plain tool of honest worth, for plain turning, boring and facing, which usually comprises 75 per cent of all lathe work. It's high grade and high powered, without the expensive extras, saving you from \$150 to \$200 in price. Write for specifications.

Fulton Machine Tool Co., 1438 Bryan Pl., CHICAGO, ILL.

Critical Users Like
The Super-Quality "CHARD"



18-Inch With
Quick Change Gear

The hardest-to-satisfy users—those whose demands call for what practically amounts to a super-quality—are the warmest in their praises of the "Chard."

An experience of over 35 years in building high-grade lathes has taught us a good deal about what critical users demand, and in the "Chard" we have given it to them.

They like it for the ease, speed and accuracy with which it handles heavy work—its ability to save time, stimulate output, and make money for them.

Claims are claims and proof is proof. We are ready to prove up on sizes 16", 18", 20", 24" and 28".

Chard Lathe Company
Newcastle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
MONARCH MACHINERY CO., Philadelphia, Pa.
DALE-BREWSTER CO., Chicago and New York.

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes**. Built in four sizes and in all styles and with any attachments desired.

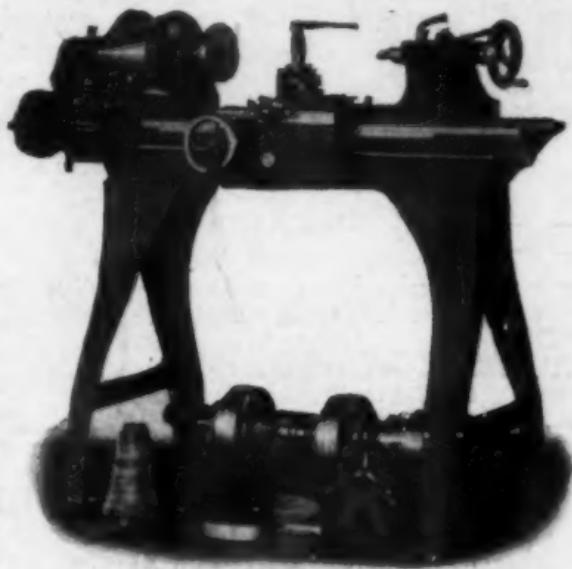
*Sell by a leading Machinery Dealer
in every machinery center.*



The Monarch Machine Tool Co., Sidney, Ohio

The "Worcester"

**For Users who Appreciate the Economy
of High Quality in their Small Lathes**



11° Worcester—Compound Rest and Power Cross Feed

It takes a good deal more thought and care, and a certain amount of pride in one's product, to make a really high-class lathe; and in the building of small lathes there is often too much tendency to let down a little bit.

We take fully as much pride in the perfection of our 11", 13" and 16" lathes, on which sizes we specialize, as if we were building the largest and most powerful tools; and as it costs so little more in cash outlay to make a lathe right, and as it gives so much better service when it is right, our policy is to spare no pains to make the words "Worcester Lathe" synonymous with "lathe quality."

If you want GOOD small lathes, let us hear from you

Worcester Lathe Company
68 Prescott St., Worcester, Mass.

Crawford Lathes



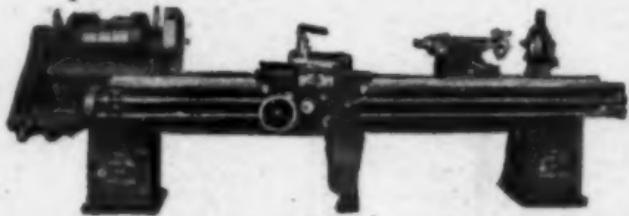
15" Tool Room Lathe

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

Crawford Machine Tool Co., Inc.
21 Park Row, New York

Sidney 15", 17" and 19" Lathes

Unequalled for High Duty Service



Here's a lathe that combines efficiency, accuracy and rigidity—the kind of a tool that stands up to the heavy grind day in and day out, and is always found dependable. Furnished with or without accessories.

Let us send you the specifications

THE SIDNEY TOOL CO., SIDNEY, OHIO

"THE SMALL LATHE FOR THE BIG JOB"

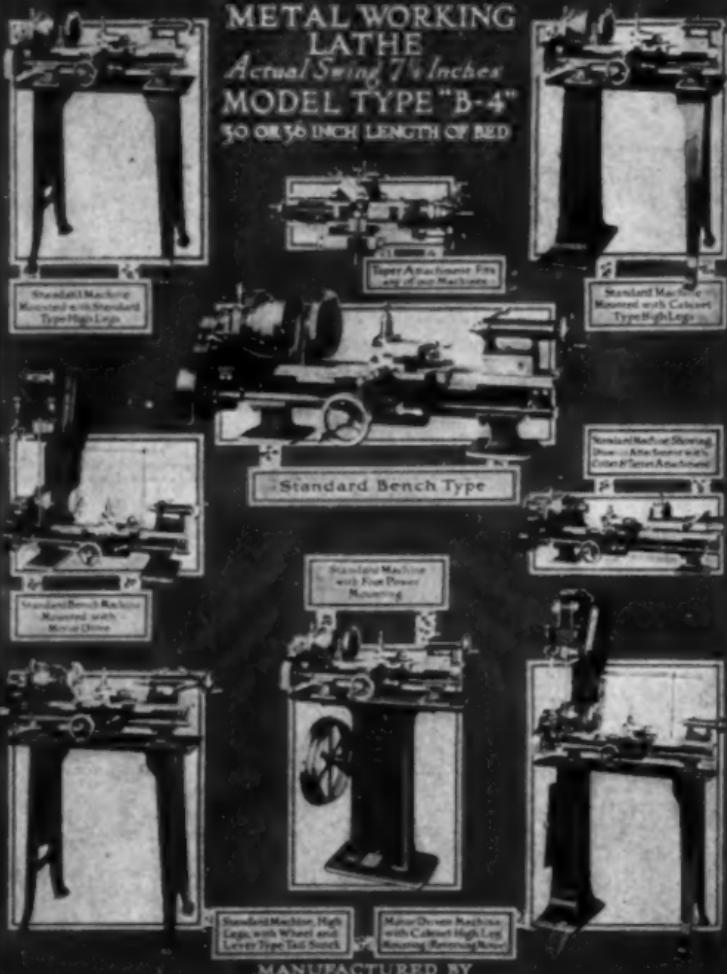
"DALTON SIX"

METAL WORKING
LATHE

Actual Swing 7 1/2 Inches

MODEL TYPE "B-4"

30 OR 36 INCH LENGTH OF BED



MANUFACTURED BY

DALTON MANUFACTURING CORPORATION
NEW YORK U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK.

COMPLETE BULLETINS SENT ON REQUEST

ATLAS—For Your Heavy Work



Quick Change, Double Back Geared
Made with 8, 10 and 12 ft. Beds, or
longer made to order. 20 and 24" Swing.

The Modern Atlas Lathe has the same characteristics as old Atlas, the super-man of ancient lore. Build, solid. Strength, extraordinary. Endurance, top notch.

Write for details of this reliable Lathe

**The Taylor Machine Co., Cleveland,
Ohio**

Can Absolutely Guarantee

The highest degree of accuracy obtainable
in 10" Universal Index Centers



Patents Pending



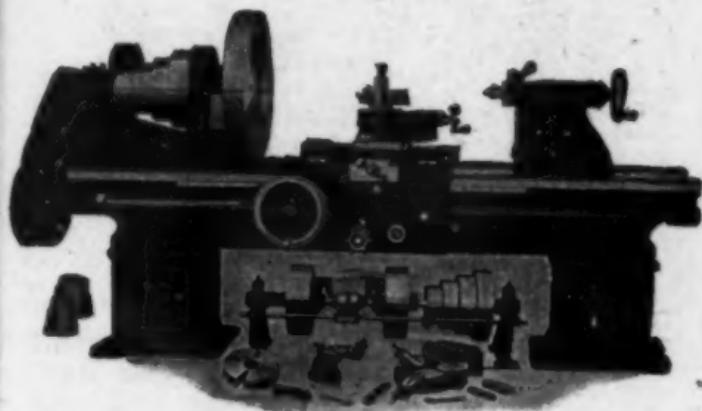
For Accuracy Get Dickow's

Sold by dealers. Write us today.

Fred. C. Dickow, 35 So. Desplaines St., Chicago, Ill.

D
I
C
K
O
W

South Bend Lathe



24 in. x 10 ft. Screw Cutting Engine Lathe.

South Bend Lathes are made in six sizes—13", 15", 16", 18", 21" and 24" swing, with beds from 4' to 16' in length. Furnished with either straight or gap bed.

South Bend Lathes have been on the market twelve years. Over 19,000 in use. Dealers in every large city.

Many large, busy plants are increasing their production by using South Bend Lathes on duplicate work.

Send for free Catalog illustrating and describing entire line

South Bend Lathe Works

Established 1906

South Bend, Ind.

East End



We manufacture a great variety
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862

Hartford, Conn.

Patented Jan. 30, 1917



Automatic Extension Reel

Makes Extension Lights Safe

No wires laying around in the way—no lamps broken—no insulation ragged out—no short circuits.

This handy little reel is only 9 inches in diameter and 2 inches wide. Holds 25 ft. of reinforced cord. Turns on a swivel. Can be locked or released automatically with a movement of the hand. Eliminates fire risk—cuts insurance cost. Approved by the Underwriters.

Write for catalog.

The Cincinnati Specialty Mfg. Co., Inc.
Manufacturers,
1913-21 Powers St., Cincinnati, Ohio

FREE

Practical Information

Pertaining to

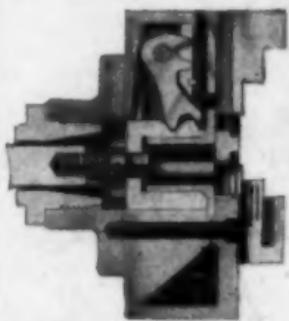
Magnetic Chucking

A bookful of illustrated information of especial interest to manufacturers seeking to quicken and cheapen the cost of machining work that can be advantageously handled with the magnetic chuck. We have brought together in our new 1919 catalogue a mass of illustrations and text showing how **magnetic chucks may be used on millers, planers, lathes and grinding machines**, and how they are now employed to facilitate difficult machining operations and to reduce the cost of work. It is more than a catalogue; it is really a manual of magnetic chucks, which it will pay every machinery manufacturer to study carefully.

We shall be glad to send a copy free, if you will favor us with your address. No obligation.

The Heald Machine Company
Worcester, Mass., U. S. A.
Makers of Grinding Machinery and Magnetic Chucks

AMERICAN Air Operated Chucks



Adaptable to all types of machine tools and to all classes of work. The instantaneous action, positive grip and great ease of operation all combine to save time and cut costs.

Special features: When the air cylinder draws the bushing back, the sector lever is forced up the incline of cam (see cut), causing a binding effect and insuring a positive grip by the jaws; a grip that can be retained independently of air pressure. The American gives greater gripping power with one third less air consumption.

The American Chuck makes it possible for women operators to run the heavier machines and secure the same output as the men operators. Glad to mail you full details.

Neidow & Payson Company
9 South Clinton Street, Chicago
General Sales Agents

Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

Screw Machine Collets

with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

When making inquiry, kindly refer to "Chuck Department"

Hardinge Brothers, Inc.
Chicago, Ill.

Sweetland Lathe Chucks

Grip Quickly and Stay Gripped



No lathe is better than its chuck.

An inferior chuck will impair the efficiency of the best of lathes, while a "Sweetland" will enable the operator to get out of any lathe the best there is in it.

"Sweetlands" have exceptional adaptability, they grip quickly and stay gripped under the heaviest cuts, and they run true, even after years of the hardest service.

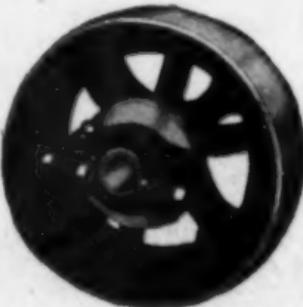
Equip your lathes with "Sweetlands" and forget your chucking troubles.

*Catalog No. 11-C describes all kinds and sizes
Better have it on file for convenient reference*

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.

Carroll Clutch

Develops
More Power



Write today for details Simple—Strong—Guaranteed

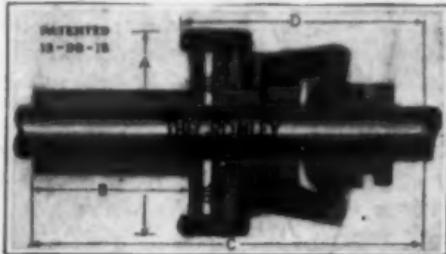
L. W. CARROLL MFG. CO., Batavia, Ohio

It is built for high speed. The metal to metal disc type. It grips the pulley with full contact from edge to edge, delivering full engine capacity at a minimum cost of horse-power. Being free from weak points, delivers long and continued service with increased output and profit. Where Carroll Clutches are used, shut-downs for replacement, adjustment, and repairs, with consequent idleness of profitable machines, are conspicuously absent.

**Self-Oiling Double
Adjustment Is Original
In Design**

National Heavy Duty Clutch

Has A Guaranteed Greater Pulling Power



Note the principle
—friction wedge
plates. No wood,
fiber or other sub-
stance required.

This modern clutch is successfully used with machine tools, mining machinery, cement mills, woodworking and agricultural machinery. Will pull more, size for size, than any other. Let us quote you on your next year's supply.

National Clutch Co., 1859 Fulton St., Chicago, Ill.

Takes Less Time Between Cuts

Barker Wrenchless Chuck Speeds Up Work

Independent
Universal
and Self-
Centering



IT WILL PAY YOU to use this Chuck because it is as quick as an air chuck, without the attendant cost of installation, pumping of air, and the maintenance of air line. It holds delicate work as lightly as desired and the more substantial work with an unshakable grip, governed by the lever pressure, which a child could operate.

Also highly efficient for bar work, easily changing from one size bar to another. It's dependable for any type of work that is done on turrets, engine lathes or semi-automatics.

*Our
illustrated
Booklet
gives
full
details.*

*Write
for
your
copy*

BARKER CHUCK DIVISION
THOMAS ELEVATOR CO., MFRS.
22 S. Hoyne Ave. - Chicago, U. S. A.

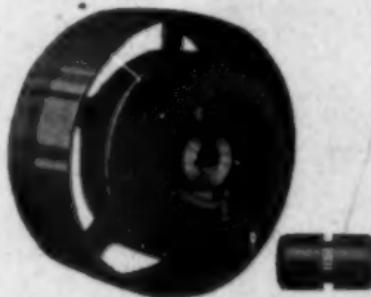
Be Ready For The Call



2509 BEEKMAN STREET

Manufacturers of Friction Clutches Since 1895

"You cannot make a silk purse
out of a sow's ear"



Enclosed Type, Self-Oiling

A silk purse has "the stuff"
in it, or it isn't a silk purse.

**Edgemont
Friction Clutches**

have "the stuff" in them, or
they would not be selected
by the leading machine tool
builders (names on request)
as their standard, and used
by them year after year with
the highest degree of satis-
faction.

Write for Catalog of "The Clutch that's stood the test"

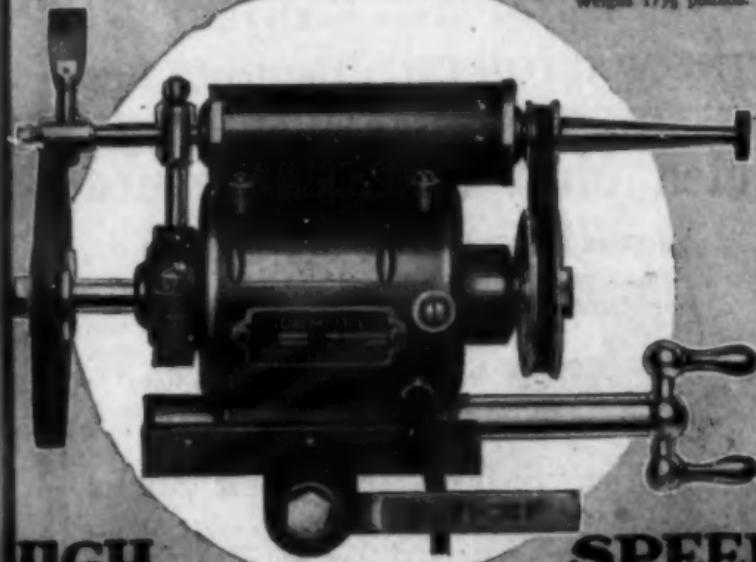
**The Edgemont Machine Co.
Dayton, Ohio**

Special Clutches and Transmission Machinery for all purposes

*There's what good tools
did for us!*

EQUIPMENT A

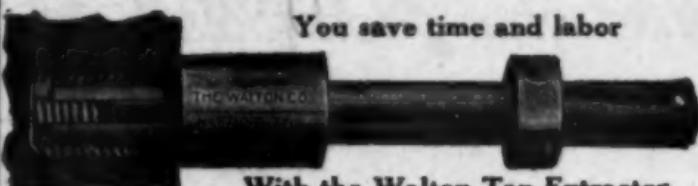
For general tool room use.
Includes High Speed In-
ternal Spindle A with reach
of 3 inches. 30,000 R.P.M.
Comes fully equipped.
Weighs 17½ pounds.



HIGH SPEED
GRINDERS

Why Treble Your Loss?

You save time and labor



With the Walton Tap Extractor

When, after a tap is broken, you quickly remove it with a Walton Tap Extractor—the loss stops right there. If your men are not so equipped it means that a high-priced mechanic has to spend a lot of his valuable time removing the "remains", and all the while the work is being delayed.

The Walton removes taps without injuring the threads. A 60-day free trial of any size from No. 8 to 1 1/4"

THE WALTON CO., Hartford, Conn.

Men Must Not Be Maimed

Safeguard Them with "Safety First" Belt Sticks



YOU cannot afford to leave undone anything that will protect your men from injury. Putting belts on moving pulleys with "any old thing" is dangerous, and may prove extremely costly. The low cost of

"Safety-First" Belt Sticks

puts them within everybody's reach. Made in two sizes, 1" to 4" and 4" to 6" at one price, only \$1.25 each or \$12 a dozen.

Order a few on trial and side-step that accident

The Ready Tool Co.
Bridgeport, Conn.

Does difficult
work with ease
and great ac-
curacy →



Knight Milling and Drilling Machines

equal three ordinary machines because they have unusual convenience and capacity. For milling, boring or drilling, or for any two or all three of these operations at a single setting, at almost any desired angle, these machines are time and labor savers of the first class.

They operate either parallel with the plane of the table, at a right angle to it, or at any intermediate angle. All adjustments are quickly and easily made. Whether used on your regular run of work, or on special and very exacting jobs, Knights always give thorough satisfaction. Three sizes.

W. B. Knight Machinery Co.

3920 W. Pine Blvd., St. Louis, Mo.

*Write for a
copy of our
interesting,
illustrated
Booklet*



Bench Drills

with 1 to 4 Spindles
 $\frac{1}{2}$ " Capacity.

Floor Drills

1 to 7 Spindles
 $\frac{1}{2}$ " to $\frac{3}{4}$ " Capacity.

Power feed on as many spindles as you want.

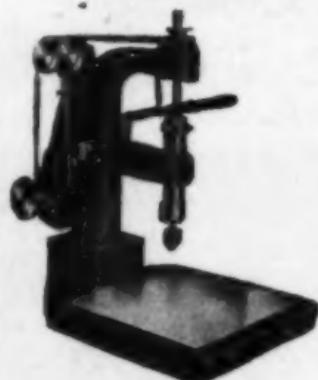


Francis Reed Co.

43 Hammond St.,
WORCESTER, MASS.

"Fenn" High-Speed Sensitive

15,000 R. P. M.—SKF Ball Bearings



A high-grade, carefully built tool, for the largest output of fine work.

Instead of the usual rack and pinion, the feeding is done with a lever direct connected to the spindle sleeve. This provides a more sensitive control, which assists the operator very materially in both the quantity and quality of his production.

A tool of peculiar merit.

Description and price?

FENN MANUFACTURING CO.

Cable Address "Fenn." West. Union Code
W. L. Fenn. W. A. Fenn.

Hartford, Conn.

Speeding-Up War-Work

Hammond High-Speed Sensitive Radial Drills

Minutes—even seconds count when you are doing light drilling and tapping. If your mechanics spend their time moving heavy parts each time they drill or tap a hole, they are cutting your production and profits.

With a "Hammond" they move the tool from place to place instantly—anywhere within a 48" circle. They move the tool and not the work. The operator's time is spent in production—not in doing laborer's work at mechanic's wages.

*Write and find out how you
can cut your light drilling
and tapping costs 25 to 33%*



The Hammond Mfg. Co.
Cleveland, Ohio

Improve Your Production

With the "Apex" Center Drill and Countersink



IT IS MONEY in your pocket to have your lathe operators use this simple, inexpensive device. It not only simplifies their work, but enables them to do a better job in less time.

The added countersink allows of facing work clear to the center without the use of half centers, or the rather delicate operation of partially withdrawing the tail stock spindle.

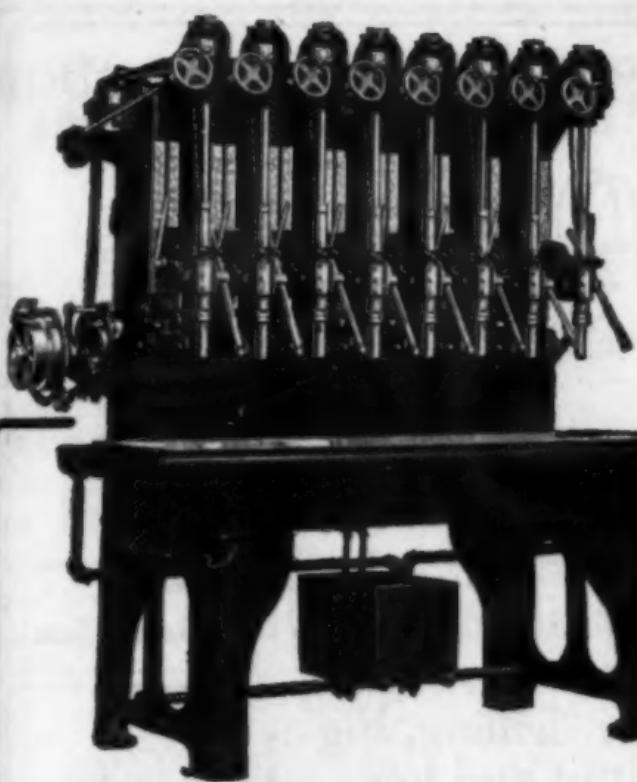
The "Apex" also enables the operator to face work without reference to other turning operations, as facing does not change the real center. This often saves several handlings of the work and changing of tools and dogs.

In short, the "Apex" saves time, insures uniform centers, eliminates guesswork, reduces breakage and improves the appearance of the work. Order one now—you'll order more later.

The Apex Drill Company

2455 W. McMicken Ave.,

Cincinnati, Ohio



Henry & Wrights 1 to 8 spindles, for $\frac{3}{4}$ " Drills & Smaller

From the smaller shops with one or more of our machines up to the larger plants, one of which has over 2,300 H. & W. drilling spindles in operation, come reports of maximum output.

The gearless power transmission with frictionless bearings is one feature which alone insures faster drilling and longer wear; it is really revolutionary in its efficiency. The Catalog describes other special and patented H. & W. features and contains a valuable Speed and Feed Chart.

Write for a copy—it's free, and no obligation.

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

EVER-SEAS REPRESENTATIVE



ALLIED MACHINERY COMPANY OF AMERICA
150 BROADWAY, NEW YORK, U.S.A.



Principal Foreign Offices: Paris, Turin, Zurich, Barcelona

Sellew Adjustable Drill Heads



effect a big saving
and increase output
where it is possible
to drill three holes
at once.

Special Heads
made to suit your
work.



*Let us figure
on your needs*

Sellew Machine Tool Company
Pawtucket, R. I.



“Buhr” Drill Heads

Adjustable and Fixed Center

All-Ball-Bearing

Adjustable from 2 to 12
spindles.

Fixed center, any number
of spindles.

We guarantee our Heads
to stand up to capacity.

Nelson-Blanck Mfg. Company
Detroit, Mich.



FEATURES

Quick Change Speed
Change in 2 seconds

Most Efficient Drive
No belt troubles

Safety First
All parts protected

Heaviest Drill Made
Yet very sensitive

All Ball Bearings



What Users Say:

A. T. Hinman, Inc., Philadelphia, Pa., says:

"We are pleased to advise that The Sipp is undoubtedly the best drilling machine we have in our shop."

Write for Bulletin No. 4 telling why

The Sipp Machine Co.

Keen Street, Paterson, N. J.

Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches. Thumb and finger are all the tools required.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills, screw machines, automatic and turret machines.

You need it now. Why wait?

Nielsen - Barton Chuck Co., 106 S. Jefferson St.
CHICAGO, ILL.

Also makers of Arbors for all kinds of Chucks

YOUNG, CORLEY & DOLAN, Inc., 115 Broadway, NEW YORK CITY
New York District Agents

Difficult tapping made easy and safe



Woodstock Improved Safety Tapping Chuck has revolutionized tapping in many shops. Successful in tough metals, blind tapping and bottom tapping in shallow holes, where a stop on machine is worthless.

For over three years it has been solving many hard tapping problems, and could also solve yours. Made in five sizes.

*Ask us to send one on trial
for that extra difficult job*

Peter Bros. Mfg. Co.
115 Railroad St., Algonquin, Ill.



Silver 20" Upright Drill

THE SILVER 20" Drills are built in four styles—plain lever feed, lever and wheel feed, power feed and automatic stop, and with back gearing—each with either round or square base. Also furnished in 2, 3 or 4-spindle gangs.

The large numbers of these machines used in the traveling machine shops on trucks in France, demonstrated their high efficiency under the hardest conditions.

Complete description upon request—20" or 25" or both

The Silver Mfg. Co. 295 Broadway, Salem, Ohio



Murchey Tools

Quicken Production

You also obtain perfection in threading by using Murchey Collapsing Taps and Expanding Die Heads. They always do the work to satisfy the most exacting inspector.

You will find Murchey Tools simple in design, quick in adjustment, speedy in operation and dependably accurate in results.

Let us have your first order now, the others will follow as a matter of course.

Murchey Machine & Tool Co.
58 Porter Street, Detroit, Mich.

PRODUCTION



NICHOLSON EXPANDING MANDREL

One set of nine Nicholson Expanding Mandrels affords an instant fit for any hole—round or square—from one to seven inches. Quick to insert; quick to remove.

No hunting around for a different Mandrel for every job.

Your machines will be producing every minute.

Put "Nicholsons" on the job in your factory.

Write now for free 30-day trial—there is no obligation involved.

W. H. Nicholson & Co.

117 Oregon St., Wilkes Barre, Pa.

INCREASED

The "Aurora"--21 to 36"

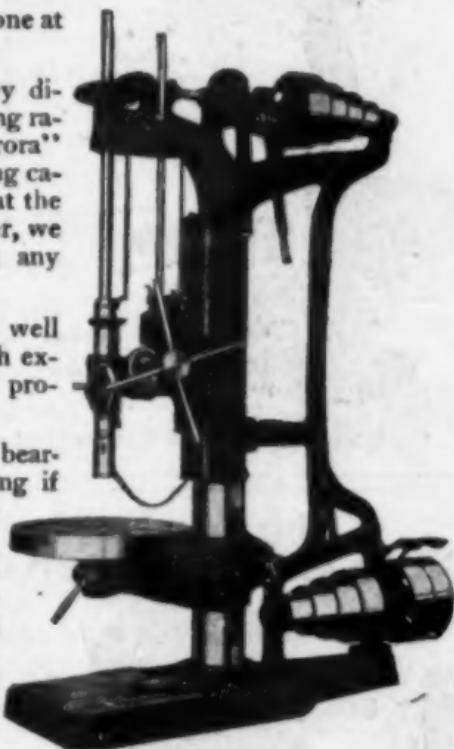
The Drill With the Pull

The work is done at the drill point.

Its large pulley diameter and gearing ratio give the "Aurora" exceptional pulling capacity or power at the drill point--greater, we believe, than on any other drill made.

This claim is well supported by both expert opinion and production records.

The large table bearing prevents tilting if the operator forgets to clamp it. Worm wheel drops automatically, giving a positive release. Other details in the construction of the "Aurora" are all worked out with the same care, for added convenience, power range and capacity.



With a factory well equipped for economical production and an unusually low overhead, we are able to offer these rugged, modern drilling machines at a most reasonable figure for their exceptional productive qualities.

May we send description and quote the close price?

The Aurora Tool Works
Aurora, Ind., U. S. A.



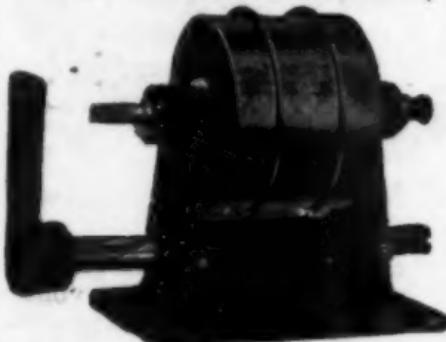
Burke Quality Excels on Fine Points

Machines of
Burke Quality
are never built
with any name
cast on the
frame but our
own—

**BURKE
CONNEAUT
U. S. A.**

For Sale Everywhere

This Tapping Machine Now Has Greater Capacity



Burke's
No. "D" Taps
 $\frac{5}{8}$ " Holes
in
Horseshoe
Steel

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$50.

Send for details today

**The Burke Machine Tool Co., Conneaut,
Ohio**

New and Improved 20-Inch
Canedy-Otto Power Drills

We do not believe their equal can be found in the combination of durability, price and capacity for drilling up to $1\frac{1}{2}$ ".

The bearings are large, with the best of babbitt metal, and with Randall hydraulically pressed sheet graphite cones, which increases their life 300 to 400 per cent.

The gears are cut on automatic machines, insuring accuracy and smooth running.



Canedy-Otto Drills are high grade throughout, with all the graduated and automatic features of high-priced machines. Equipped, if desired, with a powerful direct-connected motor, all-spur-gear drive, also a new improved tapping attachment.

*We are offering big quality for a moderate price
It is no trouble to mail you the full description*

Canedy-Otto Mfg. Company
Chicago Heights, Ill.

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders



Kelly PRODUCTION Tools

for Cylinders,
Crank Cases,
Connecting Rods,
Auto Parts, Etc.

Nose operations for all size shells.

We Make
DELIVERIES
in 1 to 10 Days

They
"ADJUST"

Write for Catalog G-H

TRANSMISSION CASE TOOLS 113 OPERATIONS
FOR MOLINE PLow COMPANY
J. M. DAVIS, GENERAL SUPERINTENDENT THE KELLY REAMER CO.

THE KELLY REAMER CO., CLEVELAND, OHIO, U. S. A.

C. W. Burton, Griffith & Co., London, English Agents.
Burton Fils, Paris, French Agts. 40 Domestic Agencies.

Many good keyseats

have

been milled with this

KEYSEATER

Do You Need One?

For Full Particulars
Write for Catalog O

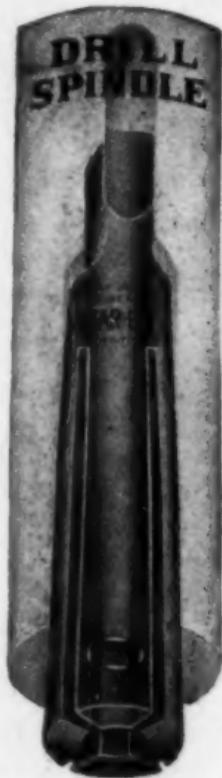
National Machine Tool Co.

2266 Spring Grove Ave., Cincinnati, O.



"Wear-Ever" Tap Chuck

Saves Time, Taps and Money



It saves time, because it adjusts automatically—no screw to take up variations and true up tap. It is always ready for work and no time is lost in setting for various size taps.

It saves taps, because it always runs true, regardless of variation in the size of shanks, saving approximately 90 per cent of all tap breakage.

It saves money, because it saves time, because it saves taps, because it is made of a single piece and sold at a low price, and because the "Wear-Ever" outlasts several friction tap chucks.

A Trial Order Is Convincing

The employer will like them, because they save time, taps and money for him.

The operator will like them, because they are so simple and easy to use.

*How about a trial set?
You'll be pleased with it.*

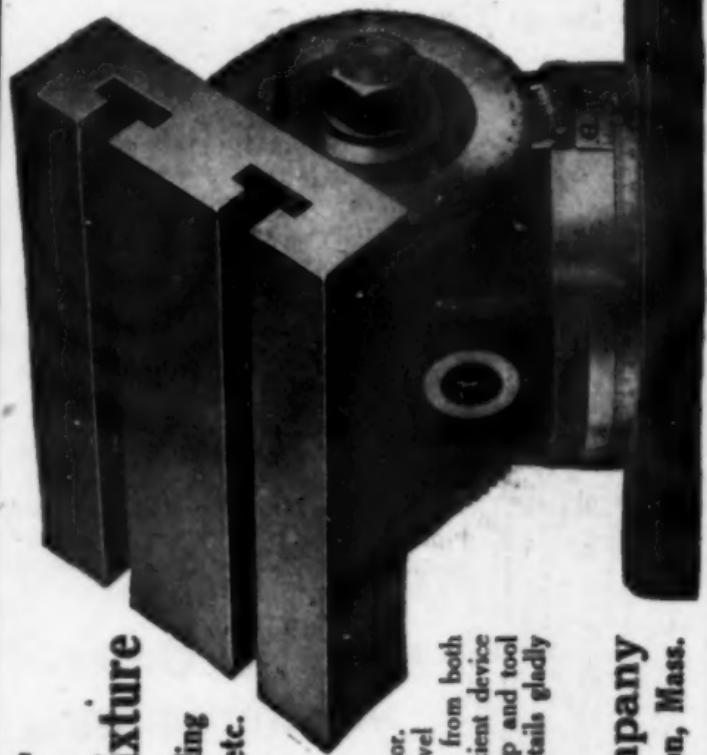
Scully-Jones & Company
Suite 555 Railway Exchange Bldg., Chicago, Ill.

BECKETT

Universal Angle Fixture

For Drilling, Milling and Grinding
Machines, Planers, Shapers, etc.

The base is graduated 360 degrees, and the table swings through 180 degrees, with vernier readings of 5 minutes obtained on each. The double vernier saves time and the possibility of error. A single nut locks the base and swivel head, and a single bolt locks the table from both ends. A wonderfully handy and efficient device which meets a real need in every shop and tool room. Made in three sizes. Full details gladly furnished upon request.



C. H. Tracey Company
161 Summer St.,
Boston, Mass.

For Machining Work at Any Angle On Any Type of Machine Tool



Universal Angle Plate—8"x10" Worm Adjusting

To set the work and hold it securely at the exact angle or angles desired is as important as the machining itself; and it is also as good economy to save time in setting the work as in machining it.

Our Angle Plate holds the work securely in any position, and adjusts easily and quickly to permit machining at any other desired angle or angles without disturbing work bolted to plate.

With the vernier attachment it insures the closest accuracy, and its time-saving and money-saving qualities are far beyond its moderate cost. The addition of centers to the platen permits the grinding of formed cutters.

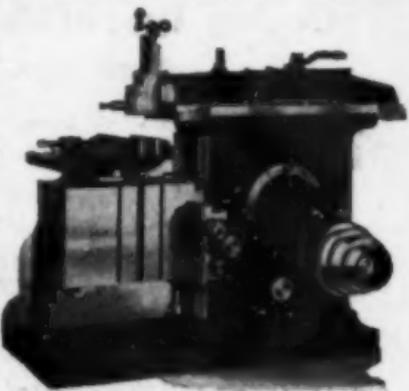
*Write for description of this accuracy-economy device
You will be glad you did if it leads you to use one*

Boston Scale & Machine Co.
100 Ruggles St., Roxbury, Mass.

COLUMBIA

HEAVY DUTY
SHAPERS

Notice the "straight front" column. No projection to interfere with travel of head when set at an angle. Column is extended at rear, providing long bearing surface for ram.



It will pay you to investigate these machines

The Columbia Machine Tool Company
Hamilton, Ohio

Shapers

The best medium
priced Shaper on
the market.

Built in 16", 18",
and 24" sizes, all
back geared crank
machines.

A few for early
delivery.



The Osborne & Sexton Mchy. Co.
Columbus, Ohio

Rhodes Shapers

7½-in. Horizontal } In Combination
3½-in. Vertical } Or Separate

Furnished separate in both the floor and bench type, and in combination in the floor type only.



They have all the essential features of the larger machines, but of course cost less, and on account of their light running and easy handling they are more efficient and economical for the machining of small work.

The Combination Model, with its patented feature, is an unusual machine with a wide range. It is easily and quickly changed from a horizontal shaper to a vertical slotter, adjustable to 10 degrees.

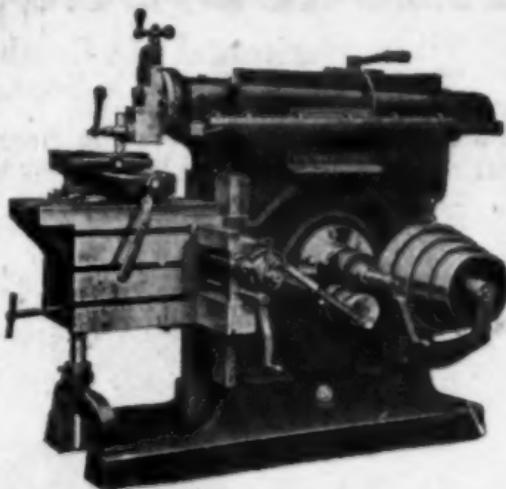
Big in economy, big in capacity, but not in price. Get in touch with us.

Rhodes Mfg. Company
Hartford, Conn.

SHAPERS

12°, 14°, 16°
Plain Crank,
16°, 20°, 25°
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28° and 32°
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B.
Cincinnati, O., U.S.A.

Giant Universal Joints

$\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $2\frac{1}{2}$ and $2\frac{1}{2}$ in., Any Length



For
Heavy
Service

to an
Angle
of 45
Degrees

For use on powerful, high-speed machines. Wearing contacts are of hardened steel and large diameters. They are self-oiling and enclosed against dirt. Also the Vanderbeek Universal Ball Joints, for any angle up to 70 degrees.

Ainslie Machine & Tool Works
Successors to Vanderbeek Tool Works
HARTFORD, CONN.



Terrell's Steel Shelving in a Large Motor Plant

The Use of Steel Fixtures Means

You Get Permanence

- ¶ Plus economy of space.
- ¶ Plus fire resistance.
- ¶ Plus reduction in fire insurance.
- ¶ Plus reduction in cost of handling stock.
- ¶ Plus reduction in cost of repairs.
- ¶ Plus reduction in cost of re-arrangement.

While the first cost of wood may be somewhat lower, the many advantages of steel makes the latter by far the most economical material to use.

Terrell Steel Equipment puts a plant on a more economical and efficient basis. Information, suggestions and prices are yours for the asking.

Terrell's Equipment Company
Hall & Division Sts., Grand Rapids, Mich.

A Universal Metal Cutter

The New "GRAY"—Capacity up to $\frac{5}{8}$ " Plate



The picture shows a sample of the intricate patterns which it cuts easily, leaving metal flat and edges smooth. Feeds like a sewing machine.

It does the work of any shearing device, and covers a big new cutting field of its own, including much work heretofore done by forging only.

This is probably just the kind of sheet metal cutter you have been looking for.

We shall be very glad to post you. Your address?

W. J. SAVAGE CO., Knoxville, Tenn.

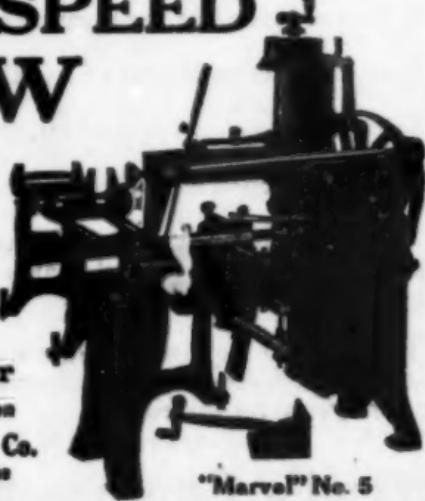
AUTOMATIC HIGH SPEED SAW

Attention is invited to the "Marvel" No. 5. Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

Feeds the Bar

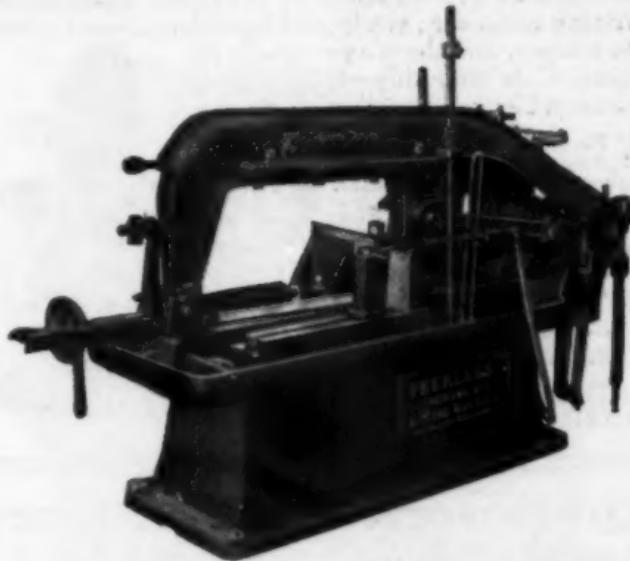
Write for full information

Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, Ill.



"Marvel" No. 5

Peerless HIGH SPEED Metal Sawing Machine



Some reasons for the great number of repeat orders:

It gives a 50% to 100% greater output than any other machine of its type. Hence, fewer machines are required to do a given amount of work, or production may be materially increased without adding to the number of machines.

It cuts with a thinner blade, saving pounds of expensive stock per day, and uses up fewer of them.

Large users of the "Peerless"—names on request—have selected it, as a rule, after comparative tests with their former favorites, and repeat order after repeat order tell a story of splendid satisfaction.

*Order a "Peerless" on 30 days' trial
If it fails to make good we pay freight both ways*

Peerless Machine Company
1609 Racine Street, RACINE, WISCONSIN

Peter Bros. Metal Cutter

Saves Material, Time and Money

THE THIN Abrasive Cutting Wheel goes thru all hardened steel, rods and bars of brass and aluminum, forming tools, etc., easily and quickly. Doesn't draw the temper, and there's practically no waste. Cuts smoothly—no grinding necessary. Simple, economical and effective.

8" Size \$17.50, with C. S.
Splendid for tool room. Cuts high-speed steel up to 1" square.

12" Size \$50, with C. S.
Cuts up to 2 $\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



Quickwork Rotary Shears

Never Fail to Decrease
the Labor Costs from
50% to 90%;

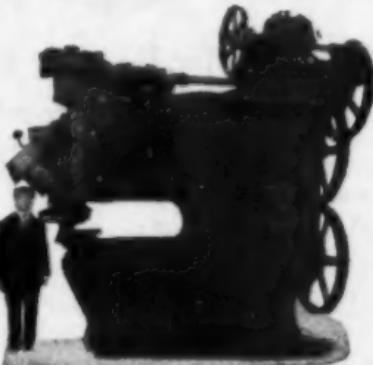
Never Fail to Increase
the Output;

Never Fail to Do Better
Work.

Cuts straight lines as well as any other Rotary Shear, and in addition will cut the most irregular, serpentine and zig-zagged lines across the sheet with one passage of the metal; or it will cut any shape or opening in a sheet without cutting in from the side.

Has three speeds; both cutters driven and the metal is self-feeding, and comes through with smooth straight edges. Send for new catalog.

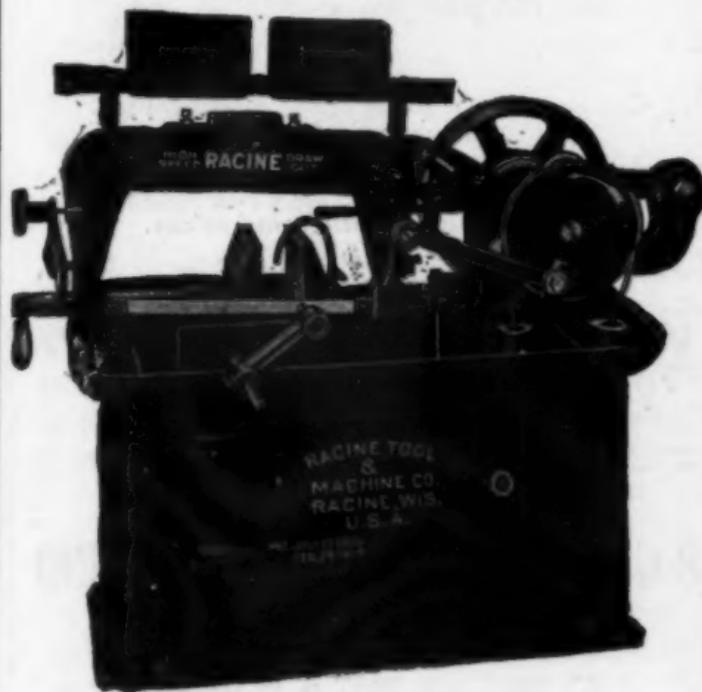
THE QUICKWORK COMPANY
Successor to H. Collier Smith, Detroit.



Twelve Sizes—Cutting anything from
the thinnest sheets to 1" Steel Plates.

Main Factory and Office
St. Marys, Ohio.

For Greater Speed and Greater Accuracy
use the
"Racine" High Speed Metal Cutting Machine
Standard the World Over



A compact machine that

Saves Time
Saves Labor

Saves Blades
Saves Material

Made in twenty-two different types. Tell us the size stock you are cutting and we will quote you on a machine suitable for your requirements.

Ask for our new Catalog H.

Racine Tool & Machine Co.
Racine, Wisconsin, U. S. A.
Use "RACINE" H-S Tungsten Power Blades

Case Hardo

The Ideal Quick Case Hardening Compound

Hardens quicker, cleaner, deeper and without poisonous fumes.

Used the same as C. P. Cyanide or other quick case agents.

Can be used a number of times, without losing its hardening qualities.

A trial only will demonstrate its ability.

Write for information and prices.

Manufactured Only By

The Thos. Buchanan Company

29 W. 3rd St., Cincinnati, Ohio

Established 1886

We Do Not Claim

B-G CASE HARDENING COMPOUND

To Be BETTER Than Cyanide

WE DO CLAIM THAT IT IS EQUIALLY

SATISFACTORY & MUCH CHEAPER

You will agree with us when you try it

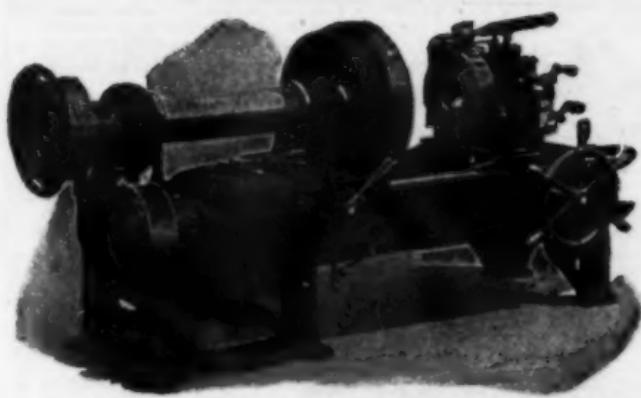
LUMP OR POWDERED FORM

Write for Booklet

Bell & Gossett Co.

613 West 30th St., Chicago, Illinois

Phone: Boulevard 2067



(No. 4 Peerless. Belt Drive. All Gears are Covered.)

With B. & K. Machines You Obtain
Pipe Threading Efficiency

For a third of a century we have been building and improving our pipe threading machines, and in offering you a choice today of our 17 styles and sizes, we are confident you are getting the very best the market affords.

B. & K.s. have the speed that means top-notch capacity, and the accuracy that assures you of a dependable product at all times.

A gear box drive instantly gives the right threading speed; dies can be changed without removing a screw, and when the die is removed, the die slot can be cleaned without removing the cover.

Our Circulars give all the details. Send for them now and get ready for the New Year.

Bignall & Keeler Machine Works
Edwardsville, Ill.



Straight Shank Turning Tool



Boring Tool



Straight Shank Cut-off Tool

Armstrong Tool Holders

Make One Pound
of High Speed Steel
go as far as Ten
Pounds in Forged
Tools.

Grand Prize Winners at
Panama-Pacific Exposition.

Complete Catalog Free.

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Allen Safety Set Screws

Absolute Safety—30% Stronger



Uniform Threads—Clean Socket Holes

Write for folder and free samples for testing

ALLEN MFG. CO., - Hartford, Conn.

Thos Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Indispensable for all kinds of drilling, reaming and wood boring in the building of automobiles, steel and wood cars, boilers, auto bodies, and in railroad and structural shops, ship and dry dock work and machinery repairs. Can be operated on alternating or direct current, 110 to 250 volts. Furnished with cord and suitable feed attachment ready for immediate use. Attach to any lamp socket.



000	Drilling Capacity	1-4"
00	"	5-16"
0	"	3-8"
01	"	1-2"
1	"	9-16"

No. 6 Electric Grinder.

Independent Pneumatic Tool Company

Chicago New York Pittsburgh Detroit
San Francisco Birmingham Montreal

Valuable Floor Space Released By Using "The Handiest Racks"



By storing bar stock in a fourth the room it usually occupies, they have released, in many a plant, an amount of floor space that is worth more every year than "The Handiest Racks" cost for all time.

They keep the stock in compact shape, where you can see what you have, where it is easy to assort and inventory, and, as a user says, when it's "so get-atable."

Weight, 125 lbs. Cap., 10,000 lbs. Two of them set back to back as a double rack will store up to 20,000 lbs. in a very compact space.

Ship on trial? Sure.

Wm. S. Yohe Supply Co.
503 Mahoning Road, N. E., Canton, Ohio

Support Long Stock With



Adjustable Stock Support

You will find it convenient, effective and a real economy. It is adapted to any machine which must be fed with long stock. Easy adjustability in height makes it a simple matter to shift the support from one machine to another, or to support any overhang. A time-saving convenience that will appeal to the man who realizes the value of minutes. We make them in two styles.

It will pay for itself over and over again.

A. F. WAY CO., Inc., - Hartford, Conn.



Have you a drilling proposition on which you would save labor, time and money?

If so—have you considered the advantages presented by the Van Dorn Portable Drills?

Whatever the requirements—whether high speed or heavy duty drilling in wood, steel, iron, marble, etc., it is always ready.

Our switch is especially designed. We make our own motor and we know of just what they are able to accomplish.

It would pay you to find out.

The
Van Dorn[®] Electric Tool Co.
Cleveland, O.

Sales Offices in all leading cities



Burke's No. 3
Bench Millers

Are Seasoned Tools

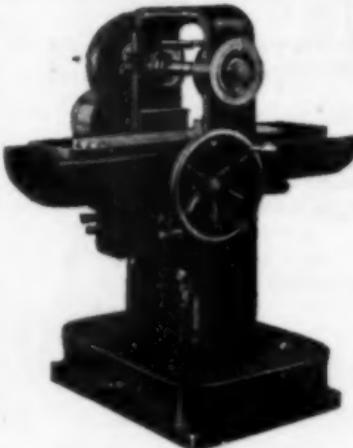
Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.; traverse feed, $3\frac{1}{2}$ in.; vertical motion of knee, $8\frac{1}{2}$ in.; table surface, $3\frac{1}{2} \times 12$ inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

A Manufacturing Engineer



—a man of experience and foresight, saw the great need of a better milling machine. The

Briggs High Duty Milling Machine

was the successful outcome of his efforts. It is making good on auto and gun parts, as well as in machine shops of every size. Takes the heaviest cuts in hard steel without chatter.

Glad to forward complete specifications

GOOLEY & EDLUND, Inc., Cortland, N. Y.

"Whitney" Hand Miller

THOUSANDS IN USE



Specially handy for the Tool Room. A wide variety of cuts can be quickly set up and completed without any sacrifice of the accuracy so essential in Tool Room work.

Prompt Deliveries

But they are going fast. Don't wait! Send your order in at once.

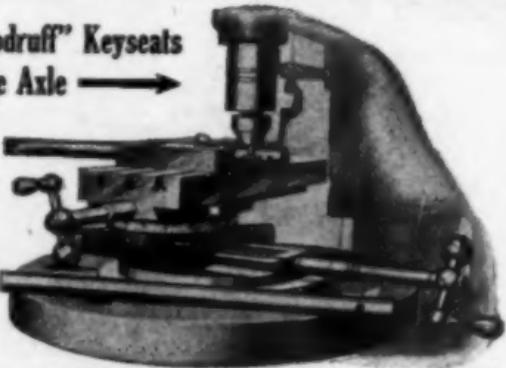
The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

Mills On Any Drill Press

Cutting "Woodruff" Keyseals
In Automobile Axle →

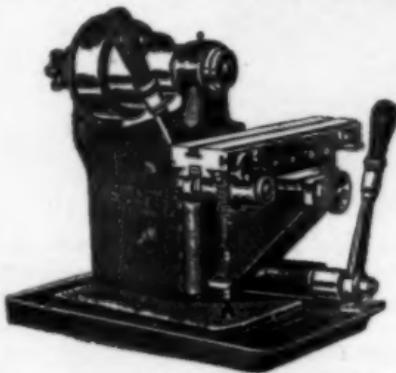
For the
Garage
Diemaker
Repair Shop
Patternmaker



The Davis Milling Attachment and Compound Table can be used on any drill press from 14 to 42-in. swing. It is equally valuable in big and small shops, as it does most of the lighter jobs as well as a large, expensive machine; cuts all kinds of keyseals perfectly. Our cylinder reamers for reborning the Ford car, and our efficient air compressor are also attractively priced. Send for circulars.

Hinckley Machine Works, HINCKLEY,
ILL.

Just The Machine

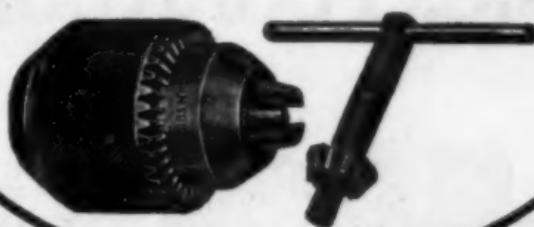


for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

**The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.**

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.



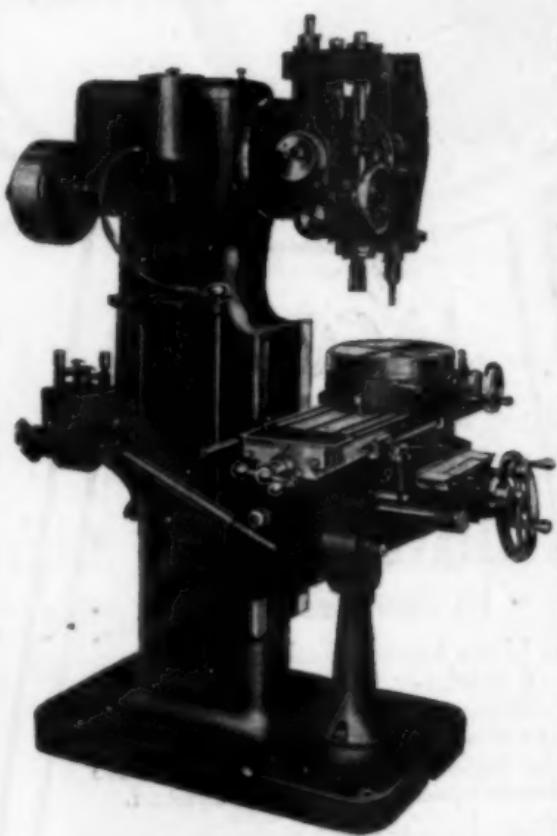
Users know whether they like a thing or not, and they voice their opinion of any mechanical device by buying and using it or by leaving it alone—as fair a vote for or against as could be devised.

There are more such voters for "Jacobs Improved" than for any other drill chuck made.

You should have the Catalog

The Jacobs Mfg. Co.
Hartford, Conn. U. S. A.

Two Notable Time Savers Die, Tool Room and



No. 14 Universal Shaper

The Cochrane-Bly No. 14 Universal Shaper has

While this machine is especially designed for making moulds, etc., it is equally well adapted to work in other lines of manufacturing.

It is being used successfully in machining broadsides, accurate keyways, splines, etc., in other lines of manufacturing performed with great economy.

The adjustments are simple movements, especially when stops are employed, so that the work may be set at one setting and economy of time and labor is secured.

Accurate Surface Shaping Machine, will also do all kinds of work, etc. It is a remarkably effective work when it is required to do delicate work.

Investigation shows that these machines will have actual savings over what they will go into making them. The price is very low, rapid, exact and reliable, and the slow and expensive labor which has always been

Don't let these get away; we can't afford to lose them.

Cochrane-Bly Company,

Saves and Result Producers for Time and Productive Work

The Cochab No. 14 Universal Shaper is a precision machine with combination and dual features heads being adjustable for working at any desired angle.

While this machine is designed primarily for accurate work on dies, jigs, tools, metal patterns, etc., it ample reserve power for coarse cuts for the rapid removal of stock, and therefore proving it valuable as a productive tool as well.

is being used to splendid advantage for making brackets for large guns, also for cutting keyways, replace gears having taper holes, and other lines of intricate work—all the operations being performed with standard equipment.

The adjustment in conjunction with the range of table movements, especially circular and compound tables employed, make many operations being performed with economy in time and much less use of cash.

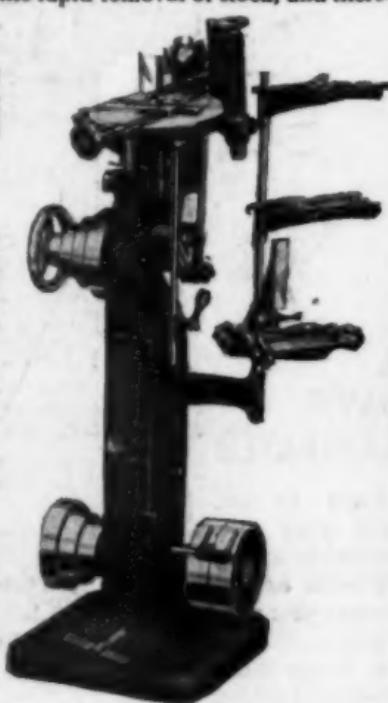
Accurate filing simple and easy with the No. 2 Filing Machine, which will also do metal jig-sawing, lapping, It is a real money in the tool room, and for producing work when it is required on duplicate parts too expensive to be made in the ordinary way.

Investigation shows that neither of these machines have actually paid anything after a few months' use, but will go on saving money for you as long as you use them.

The principle underlying both is the substitution of exact and very low cost machine operations for hand and expensive labor, on a peculiar class of work which has always required especially skillful workmanship.

Please get in touch; write for more details.

City, : Rochester, N. Y., U.S.A.



No. 2 Filing Machine

Modern Methods for Quick Work



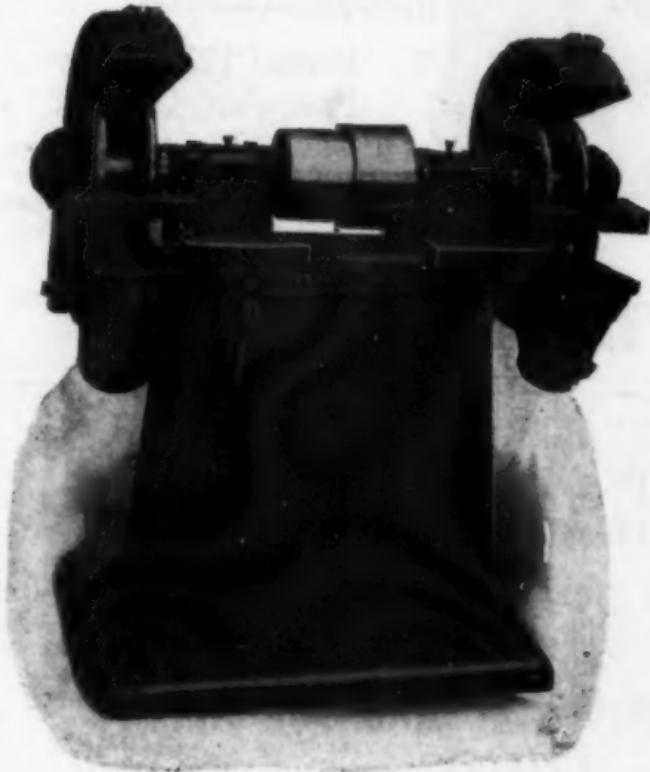
A DAVIS KEYSEATER

Motor driven,
will save you
valuable space
as well as in-
crease your pro-
duction. It is
an investment
you can't afford
to overlook.

Write for Circular

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

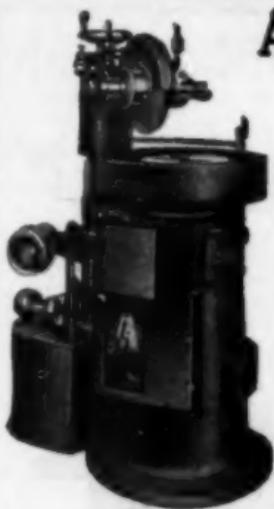
Grind it on a "Blount"



No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.



Accurate Grinding

Of Flat, Convex and
Concave Surfaces

No more accurate, convenient and durable machine can be found for this purpose than the—

Bristol 12" Rotary Precision Grinder

It grinds continuously, saving lost motion, to within .0004" of manufacturing accuracy. Also built for flat work only. Investigation invited.

**Bristol Machine Tool Co., Bristol, Conn.
Successors to The C. G. Garrigus Machine Co.**

**GREATER SPEED
HEAVIER CUTS**

Possible on the

STERLING

**UNIVERSAL TOOL
GRINDER**

through the use of ball bearings in the wheel spindle.

Write for catalog illustrating and describing the other superiorities of the **STERLING GRINDER**

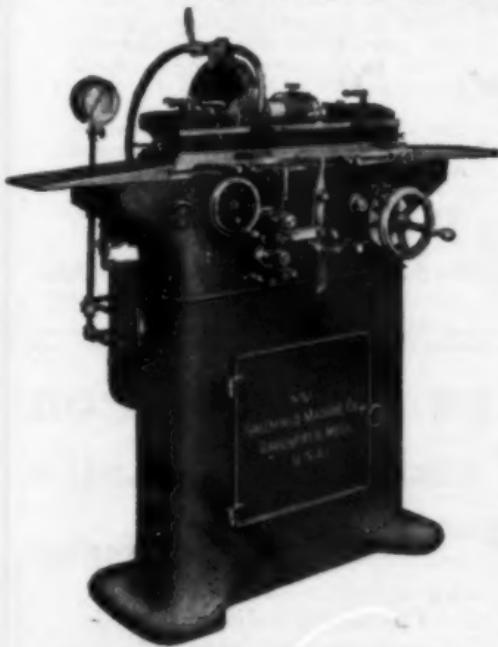


**McDONOUGH MFG. COMPANY, Machine Tool Department
Eau Claire, Wisconsin**

Greenfield

No. 1 Plain Grinder

For saving time and money in the finishing of small cylindrical parts



Within
the
reach
of
every
shop

The Small Grinder With the Rapid Cut

The hydraulically driven table operates and reverses with such wonderful smoothness that it permits two to three times as rapid cuts as larger and much more expensive machines. It takes lighter cuts at correspondingly higher speeds, and saves several hundred dollars in cost without loss in production. It is extremely simple, highly efficient, and unusually economical in both first cost and cost of operation.

*It will pay you to get our proposition
Our Universal Grinder is another good buy*

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Common Sense Tells You



that your money will not buy a better tool than one correctly manufactured from the best raw material procurable.

Tungsten-alloy steel, milled teeth and uniform temper are all features of

Liberty Hack Saw Blades

Liberty blades are more than ordinary hack saw blades—they represent the utmost in the construction of metal cutting saws.

Our .049-.10 point blade is recommended for use in all high speed hack saw machines.

Sterling Products Co., Inc.

549 Washington Blvd.,
CHICAGO

15 Park Row,
NEW YORK

Partridge Combination Grinding and Polishing Lathe



With Ring Oiling Bearings

Practically indispensable for garages, tire repair shops, electro-platers, small machine shops, etc.

Write for Circulars

E. O. Partridge

2041-49 W. Lake St., Chicago

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels,



New

"Wells" Universal Cutter Grinder

No. 190

A Quality Tool



In common with the G. T. D. policy of modernity, the "Wells" Universal Tool Grinder has been redesigned and brought strictly up-to-date. Rigid inspections of raw materials and finished product assure the uniformly perfect quality of each & every machine.



Your tool room equipment is not complete without one.

A trial convinces
Machine Tool Division

Greenfield Tap and Die Corporation

Greenfield,
Massachusetts,
U. S. A.





The Manhattan A Surface Grinder of Special Merit

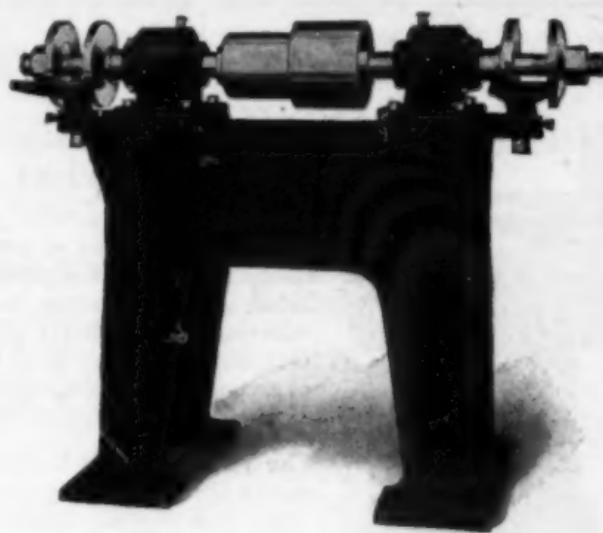
A tool of precision and quiet efficiency,
with practical improvements in nearly
every detail.

It is so massive and rigid that
there is no vibration, yet so
compact that it takes little floor
space. The construction of
spindle, with over-size phos-
phor bronze bearings, give unusual
capacity for heavy cuts. Dials on
both feeds graduated to thousandths,
of which fractions may easily be obtained.
The large table is surface ground with
its own wheel. Unequalled in its com-
bination of range, convenience, output
and accuracy.

May we mail specifications?

Manhattan Machine & Tool Works
Dept. A..

Grand Rapids, Mich.



BALL BEARING GRINDER

5 Sizes for Wheels, 8"x1" to 30"x4"

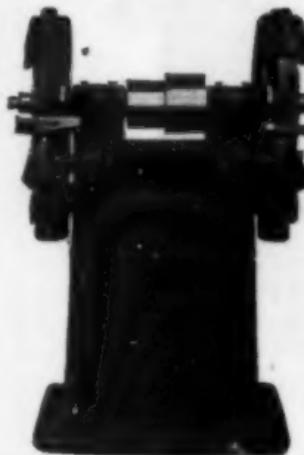
Aside from the very great advantage of ball bearings over any other type in the matter of power consumption, there is the further material advantage of greater longevity, as well as a considerable saving in lubricant, ball bearing machines requiring lubrication only every few months.

Bearings employed are of highest grade American make—double row combined radial and thrust type, and fully guaranteed by both the manufacturers and ourselves.

*For Complete Specifications and Description,
Ask for Bulletins 8 & 9*

The Webster & Perks Tool Co.
Box 1340, Springfield, Ohio, U. S. A.

For Critical Users



Imperial Wick Oiling Grinders

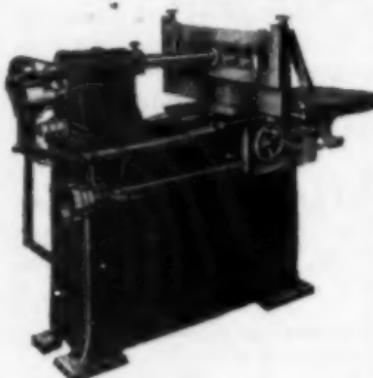
are designed for those who believe in the economy of good machines. They have large, bab-bitted, wick oiling bearings, lined with sheet graphite, heavy spindles, flanges one-half diameter of maximum wheel size, ring oiling bearings on countershaft, etc.

Our new Box Bed Column, shown in cut, eliminates vibration. It is regularly furnished on our 16" and 18" machines.

CLIZBE BROS. MFG. CO., Plymouth, Ind.

Schmidt's Internal Grinder

Rapid—Accurate—Dependable



Especially adapted to the regrinding of tractor, truck and automobile engines.

Automatic reverse feed. Ball-bearing spindle and countershaft.

A simple, handy and thoroughly dependable machine for rapid and accurate work.

Immediate delivery.

Write for description and the moderate price

B. L. Schmidt Co., A 8, Davenport, Ia.

The Thompson Cutter and Tool Grinder With Special Universal Features

Cutter Sharpening

The "Thompson" is unsurpassed for the quick, easy and accurate sharpening of all forms of cutters and reamers.

Special Features

Cylindrical, surface and internal grinding attachments make the "Thompson" a highly desirable machine in the manufacture of small parts. A special radius grinding device is also furnished when desired.

The grinding wheel head is fixed and immovable. All adjustments are made by the parts carrying the work.

We can make immediate delivery of belt-drive machines with separate countershaft; 60 days on self-contained types, with motor or jack-shaft drive.

We have a cleverly illustrated folder showing a variety of operations. Let us send you a copy. No obligation.



Self-contained—For motor drive

**The Thompson Grinder Co.
Springfield, Ohio.**

Grand Rapids No. 1

Universal Cutter, Reamer
and Tool Grinder



Simple in Design
Efficient in Service
Accurate in Workmanship
Economical in Cost

Ask for bulletin giving full particulars

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.
Grand Rapids, Michigan, U. S. A.



Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive
Circular*

Immediate Delivery

Simmons 10" Universal Index Centers



Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

You need one? Order now!

Simmons Machine Co., Inc., Albany, N. Y.

New York, 1001 Singer Bldg.
Buffalo, 358 Ellicott Square

Detroit, 804 Dime Savings Bank Bldg.
San Francisco, 316 Rialto, Building

Perfect, Noiseless Riveting

With the Grant Rotary



Noiseless in operation.

Highly polished rivet heads.

No hammer or tool marks.

Speed, one rivet a second.

Operated by a boy or girl.

Uniform results—each rivet headed with the exact degree of tightness or looseness desired.

The Grant Rotary Rivet Spinning Machine challenges comparison in its combination of speed, economy, noiseless operation, and finish and uniformity of product.

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.



Dependable Punches

There is more difference in the performance of punches than in their appearance. It requires infinite care and lots of punch experience to make them dependable for their heavy, exacting work.

**T. H. L. Punches are
Accurate, Uniform, Dependable**

They are uniformly constructed of the correct steel, by experienced punch makers, for maximum results. Prompt shipment of all regular sizes. Special sizes quickly made.

How about a trial order?

T. H. Lewthwaite Machine Co.
415 East 31st St., New York City

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes
heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, size 7-16 to 5-8 in.

Built in Eight Sizes

Send us sample assembly parts with rivets or sketch of your
work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.
Rochester, New York

Roll Feeds

For All Makes of Presses

The Acme Roll Feed *doubles and triples production over hand feeding.* Several in use by U. S. Government.

Mounted on its own bolster plate, it is easily taken off and put on. Has extra large rolls, hardened and ground. Feeds accurately at high speeds. Gears guarded.

Furnished with scrap cutter and straightening device if desired.

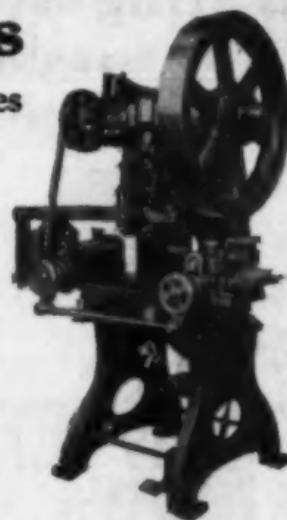
We make roll feeds, dial feeds and other special feeds for all makes of presses.

Get in touch with us

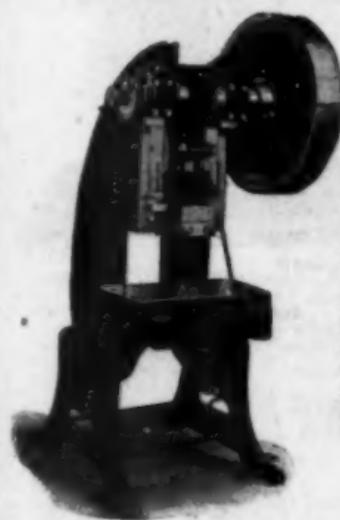
Acme Machine Works

4125 E. Ravenswood Ave.,

Chicago, Ill.



L-J Inclinable Power Presses Do Rapid Work



When you buy our Presses you also get the benefit of our valuable experience of the past 25 years. Cut shows our No. 4 Flywheel Press, capacity 34 tons pressure.

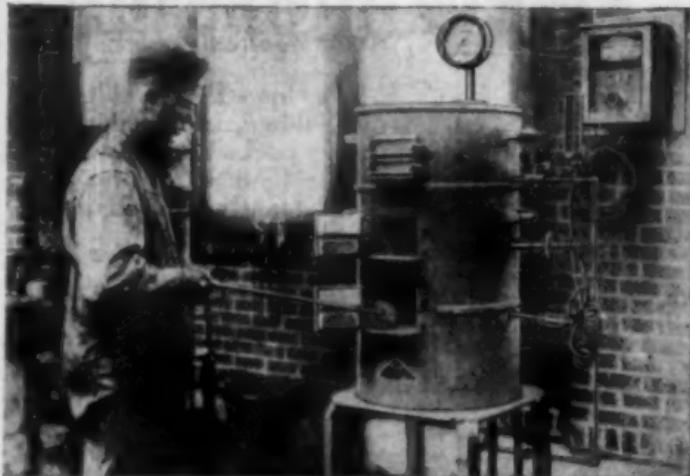
Practical men appreciate the massive frame, exceptionally large shaft bearings, solid web flywheel, with removable bushing, wick oiling bearing caps, etc. The many conveniences insure top-notch capacity and accurate work; and safety for operator and dies.

Illustrated folder gives details of the several sizes. Write us.

Loshbough-Jordan Tool & Mch. Co.
Elkhart, Indiana

A Real Improvement In
Heat Treating Steel Tools

Saving Time, Cost and Space
With Greater Certainty in Results



The "TRIAD"—Three Furnaces in One

The "Triad" has three compartments in one unit, for pre-heating, high-heating and drawing the temper.

It's economical, because all three compartments may be used at once with only one oil or gas burner to heat them, and because it costs less than separate units.

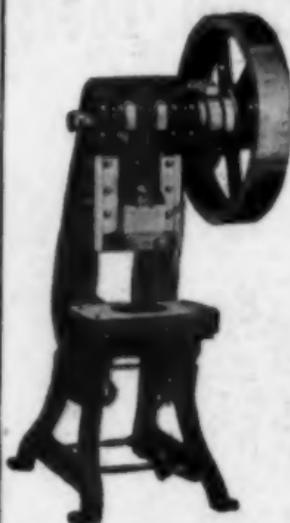
It is quick, heating carbon steel to hardening temperature in 10 minutes, and high speed steel in 20 minutes.

It gets results that are more certain and uniform, without pitting or scaling from oxidation.

Write for more information—no obligation

W. R. BENNETT CO., Elmwood, Conn.

Here Is A Press



With Plenty of Steam
Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

The Etna Rotary Swager



Unequalled for pointing, tapering, or reducing stock to any circular form within limits of a few thousandths of an inch, by striking 3,000 or more powerful blows a minute with a pair of grooved dies.

It has often multiplied production five to ten times when replacing power hammers.

Made in regular sizes to swage $\frac{1}{4}$ " to $4\frac{1}{2}$ " diameter. Any reasonable change in size made to suit.

Get acquainted with Etna swaging possibilities. Write for Catalog, which explains fully and gives actual production figures on several operations.

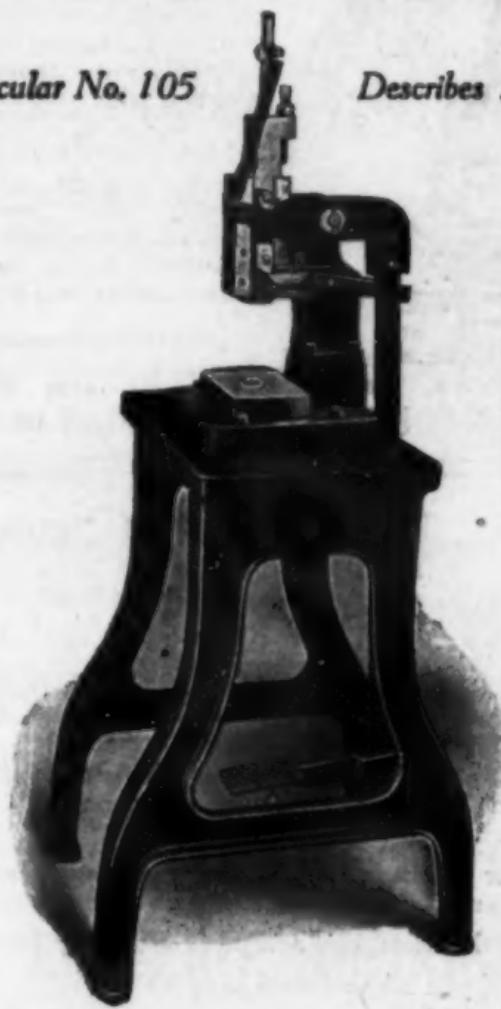
The Etna Manufacturing Co., TOLEDO,
OHIO

Spring Foot Press No. 105

Uniformity of Blow Vibrationless Non-Fatiguing

Circular No. 105

Describes It



The Taylor & Fenn Company
Hartford, Conn.

The Wastage of 5 Men's Time Is Stopped with a Canton Crane



Heavy castings and machines which require from 6 to 10 men to move around, are easily and economically handled with

"The Handiest Tool In the Shop"

**Canton Cranes do the work
in safety, saving money,
muscle, time and temper.**

Your choice of many sizes.

Booklet E-8 tells you all about them.

CANTON FOUNDRY & MCHE. CO., Canton, O.

ELECTRIC EUCLID HOISTS

Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

Will you take advantage of it?

The Euclid Crane & Hoist Co.
Dept. C EUCLID, OHIO, U. S. A.



You Can Write Indelibly on Steel

even when hardened, just as easy as with a pencil on paper, by means of

THE ELECTRO - STYLOGRAPH

Very useful for permanent marking of tools,
gages, dies, metallurgical test specimens, etc.

THE ELECTRO-STYLOGRAPH CO.
2 EAST 24TH STREET, NEW YORK



No. 24 Press

**Efficient
Equipment
Atlas Presses**

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches. For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. It will pay you to investigate.

Atlas Press Co.
317 N. Park Street,
Kalamazoo, Mich., U.S.A.

10 to 2000 Tons Force Applied

With Lourie Arbor and Power Presses

Power Pumps; Baling Presses;
Bulldozers; Hydraulic Ma-
chines; etc., etc.



Let us build to suit your
needs. Glad to submit
estimate. Write us.

Lourie Mfg. Co.,

Springfield, Ill.

Cap.
20
Tons

List
Price
85⁰⁰



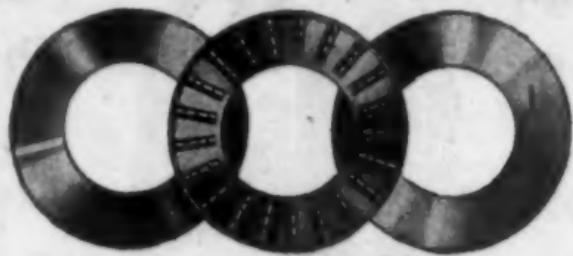
WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

List Price (^{32-in.}
Width) \$85.00

Weaver Manufacturing Co.
2179 So. 9th Street, Springfield, Illinois



BEARINGS

LIGHT DUTY

HEAVY DUTY

ALL TYPES
MANY SIZES IN STOCK

THE GWILLIAM COMPANY
ENGINEERS

253 WEST 58th ST., (at Broadway), NEW YORK
Branch, 1314 Arch St., Philadelphia

Abbott Steel Bearing Balls

High Grade—Highly Finished



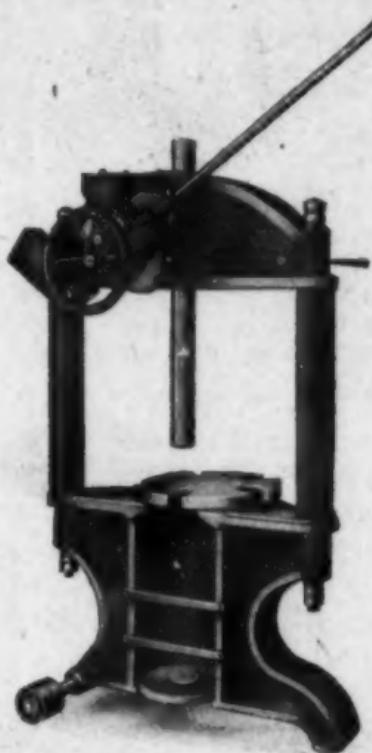
We shall be glad to have your inquiries and make estimates

The Abbott Ball Company
Elmwood District, Hartford, Conn.



Greenerd Arbor Presses

From 15 lbs. to 40 Tons Pressure

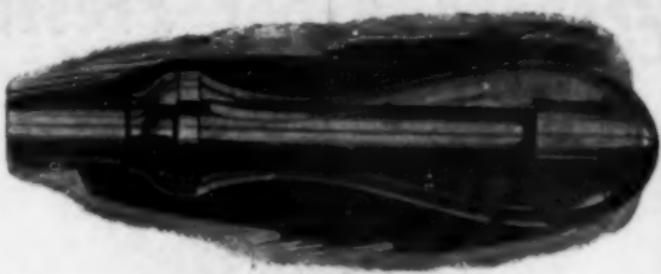


No. 17. Leverage, 250-1. Weight, 2100 Lbs.
One man, 20 tons; two men, 35 tons pressure

GREENERDS are *original* in design, superior in construction, adaptable to many uses, and an ever-present help in time of trouble. The frames are made of a strong steel mixture which withstands a tremendous strain. Racks and pinions are of a special alloy steel, heat treated. The form of gear tooth was designed by Brown & Sharpe especially for Greenerd Arbor Presses. They are made for the thousand-and-one purposes where a steady, even pressure can be applied, from driving pins into and out of small rolls and cutters to straightening automobile axles.

The Catalog is worth asking for. It explains.

EDWIN E. BARTLETT, Nashua, N. H.



Quick Action

This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Sand for Catalogue and prices.

The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

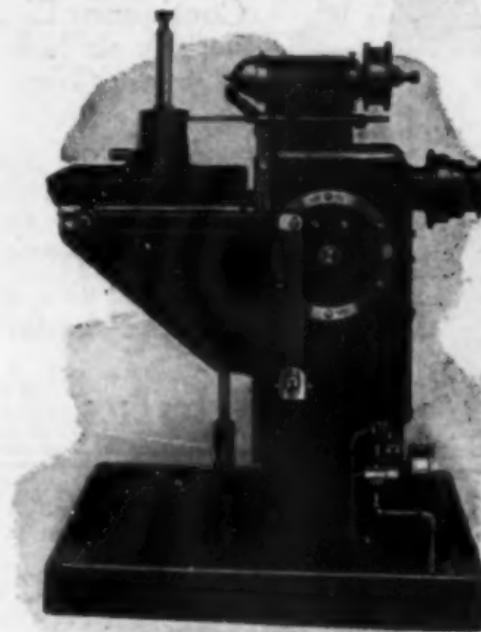
GITS BROS. MFG. CO.
1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Cross Gear and Tooth Rounder

A Machine that has Revolutionized
Both Quality and Quantity Production



Quality:—It makes the end of each tooth a perfect half-circle from tip to root.

Quantity:—It rounds 24 teeth per minute, any pitch $\frac{5}{8}$ or finer.

Let us figure on its application to *your* sliding gears, with our guaranty of work, time and cost.

Cross Gear & Engine Company
Detroit, Michigan

Patented here and abroad; sold ONLY by us

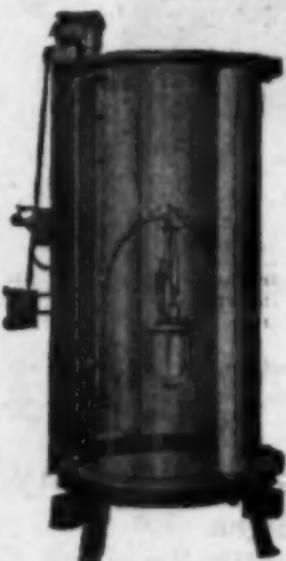


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The Wickes

Continuous Electric.
Sells at half the
price. Uses half
the current
of others. Perfect prints
up to 48" in
width and of
unlimited
length.

Wickes Bros., Water St.,
Saginaw, Mich.



Electric Blue Printing Machines

Write for Catalogue B-3

Buckeye Engine Co.
Salem, Ohio

The PHOTOSTAT—A Thrift

(Reg. U. S. Pat. Off.)

Saves Labor



This Cut
Shows a
PHOTOSTAT
in Operation

The PHOTOSTAT, which is manufactured by the Eastman Kodak Company, is a combined camera and copying machine. The copy is made directly onto a roll of paper. No intermediate glass plate, or film, or other negative, has to be made. By copying thus directly onto the paper, the copy is made very quickly and at a low cost. Also the copy is a facsimile of the original, so that there can be no mistake in it. The print is developed and fixed right in the apparatus itself; this part of the process, as well as the focusing and exposing, all being mechanical. The print is then removed to a tank of running water, in which it is washed free from chemicals. Finally the print is taken from the water and dried and is then ready for use. The whole process is a rapid one, the average speed per print being from one to five minutes.

The PHOTOSTAT is used in Factories, Machine Shops and Offices, to copy at actual size, in reduction, or in enlargement:

Pencil Drawings, Blue Prints, Tracings, Sketches, Shop Orders, Illustrations for Salesmen, Cuts and Drawings for Patent Work, Cuts and Lay Outs for Advertising, Reports, Cost Sheets, Vouchers, Accountings, Contracts, Testimonial Letters.

*A small book giving detailed description
will be sent to you upon request to the*

Commercial Camera Company

343 State Street, Rochester, New York

325 Grosvenor Bldg., Providence, R. I.

Alfred Herbert, Ltd., Agents, Coventry, England.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
" No. 0 32 " "
" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
" No. 9 Tilting Table
" No. 10 " "
Boeing attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
12, 16, 20, 24 and 30 in., 7 ft. tables
and guard.
Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago

It Increases Efficiency

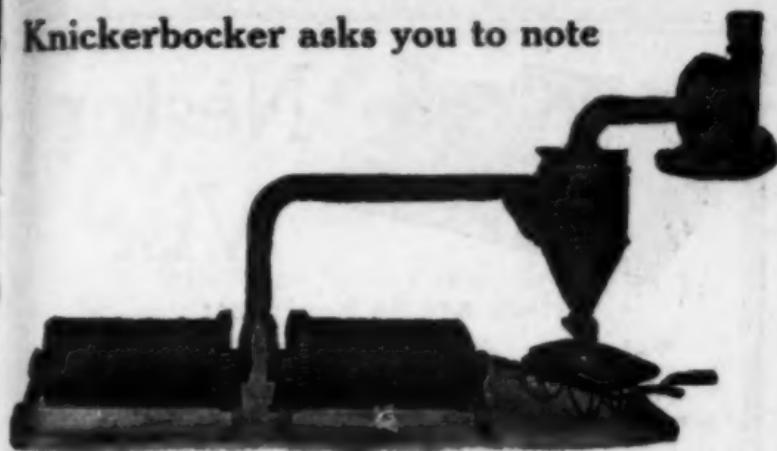
By Having a Place for Everything

This has been the experience of leading manufacturers who have installed this Modern Bench in numbers for their tool makers and bench hands. With six drawers, a blueprint slide, a shelf, and three large compartments for stock, they can put their hands instantly on what they want, and they are not distracted by a litter of tools, stocks, blueprints, etc. Write for full description and price, and let us refer you to large users.



THE RITCHIE-WERTZ CO., Dayton, Ohio

Knickerbocker asks you to note



The Points of Superiority

In the "Rarefied"

Greater efficiency—After thoro investigation and trial, a number of the largest plants in the country installed from 5 to 20 "Rarefieds"—one is using 26 at present.

Saves power—They never fail to save power. One firm is now doing with 25 electric h. p. what formerly took 45 h. p.—a net saving in this instance of 20 h. p.

Reduces repairs—Abrasion of fan parts is prevented because the "Rarefied" collects and automatically discharges the dust before the air reaches the fan. Saves labor because there's no cleaning out by hand.



Our interesting Booklet gives full details as to "how" and "why."

Write for a copy

The Knickerbocker Co.
Jackson, Mich.



Nestor Vise

Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

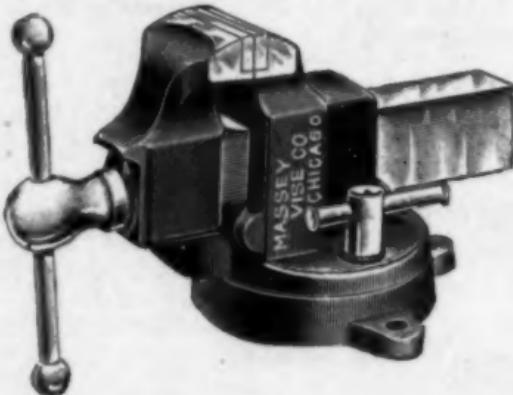
For size and weight an extraordinary gripping range is provided.

Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up.
Immediate delivery.

Write for particulars, sizes and prices

Nestor Manufacturing Co., Inc.
40 W. 13th St., New York City



Our new No. 18 Catalog just off the press illustrates our complete line of iron and woodworkers' vises. *Write for a copy.* Massey vises are guaranteed to give you the service you have a right to expect from good shop equipment.

Massey Vise Company
549 Washington Blvd., Chicago, Ill., U. S. A.

Redface Pulleys



Sheaves and Fly Wheels



PERMANENT: They are permanent, as they are not affected by age, heat, cold or moisture.

RELIABLE: They do not loosen up under vibration or intermittent loading.

RUN TRUE: They run true, steady the line shaft, and have a very small load due to windage.

REDFACE PULLEYS are especially adapted to use on motors, fans, pumps and special machinery.

Catalog mailed promptly upon request

Pyott Foundry Co.

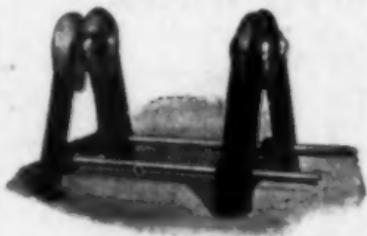
Cast Iron Pulleys, Sheaves and Fly Wheels

328 N. Sangamon St.,

Chicago, Ill.

Sensitive Balancing Ways

Suitable and Reliable for Balancing Cutter Heads, Crank Shafts, Airplane Motors, Propellers, Polishing Wheels, Cones, Pulleys, Gin Brushes, Armatures, Rotors for Turbines, Etc. Several Sizes.



Anderson Ever-Ready Balancing Ways

require no adjusting. The rotating discs are made of chilled iron ground true on face and perfectly balanced. They run in especially designed ball bearings and are extremely sensitive.

Dependable at all times. Write us for price.

Anderson Bros. Mfg. Co.
115 Morgan St., Rockford, Ill.

GEM VISE



Drill Vise suitable for the Tool Room and Machine Shop. Write for prices and further description.

Made by

J. E. Martin Tool & Die Co.
548 West State Street, Springfield, Ohio

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

FOR SALE BY

The Simple Oil Engine Mfg. Co.,

Trinidad, Colorado

DRAWINGS FOR OIL ENGINES.

Drawings for line of oil engines. Engines in the six years; can be seen in operation any time.

FOR SALE BY

Frank H. Parker Company,

First Nat'l Bank Bldg., Chicago, Ill.

Machinery Merchants—Telephone, Randolph 925

Drill press, 56" vertical..... \$ 350.
Grinder, 39" x 30" wheel..... 75.
Lathe, 14" x 6", p. r., 14" h. s.... 175.
Lathe, 16" x 8" L. & S., q. c. g.... 625.
Lathe, 28" x 16" Harris, p.r., a.s. 300.
Planer, 36" x 36" x 12" open side... 1200.
Planer, 36" x 36" x 14", 2 heads... 1500.

Saw, cold, 36" Espen-Lucas... \$ 350.	350.
Shaper, 24" Steptoe, geared... 350.	350.
Shear, 8" square, 20 ga. power. 250.	250.
Shear, 30" square, no gauge.... 25.	25.
Testing mchc. 50,000 lb. Riehle 600.	600.
Tire setter, West No. 2..... 1200.	1200.

What have you to trade or sell?

FOR SALE BY

The New Departure Mfg. Co.,

Bristol, Conn.

ROTARY SURFACE GRINDERS.

12 Rotary surface grinders; oscillating heads with vertical adjustment and variable stroke, arranged to feed automatically in both directions. Greatest distance center of wheel to top of chuck, $9\frac{1}{2}$ "; vertical adjustment of head, $3\frac{1}{2}$ "; diameter of magnetic chuck, $10\frac{1}{2}$ "; voltage, 110 d. c. Machines are in good condition and complete with grinding wheel and guard. Walker magnetic chuck and switch, overhead countershaft, water guards, piping and connections for central water supply system. Special price for immediate acceptance, \$250 each f. o. b. Bristol. Further information on request.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

Boring and chucking machine, vertical, 36" Brown & Sharpe.

Engine lathe, 24" x 12" Pratt & Whitney.

Engine lathe, 25" x 16" Blaisdell.

Engine lathe, 28" x 12" New Haven.

Lot of 12, 14, 16 and 18" lathes, with various size heads.

Planer, 36" x 36" x 12" Wilson, two heads on cross rail.

Planer, 30" x 30" x 8' Woodward & Powell, one head on cross rail.

Planer, 24" x 24" x 6' Woodward & Powell, one head on cross rail.

Turret lathes, 2" x 24" Jones & Lamson, geared set-over head, single pulley drive, bar equipment, (2).

Turret lathe, 2" x 26" P. & W., all feeds, oil pump, bar equipment, b. g. and friction head.

Turret lathes, No. 3 Foster, $1\frac{1}{2}$ " automatic chuck capacity, oil pan, pl. hd., (4).

Lot of other size lathes and screw machines, drill presses, etc.

SECOND-HAND MACHINERY

FOR SALE BY

**McCoy-Brandt Machinery Company
Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.**

NEW EQUIPMENT.

LATHES.

19"x14' Sidney, q. c., d. b. g.	16"x 8' South Bend, s. b. g., cone.
19"x12' Sidney, q. c., d. b. g.	18"x 6' South Bend, s. b. g., cone.
19"x10' Sidney, q. c., d. b. g.	15"x 6' South Bend, s. b. g., cone.
17"x10' Sidney, q. c., d. b. g.	12"x 6' South Bend, s. b. g., cone.
15"x10' Sidney, q. c., d. b. g.	14"x 6' Filamith, semi-q. c., cone.
15"x 6' Sidney, q. c., s. b. g.	16"x 6' Climax, q. c., d. b. g., cone.
18"x10' South Bend, s. b. g., cone.	10"x 4' Climax, s. b. g., cone.

MILLING MACHINES.

No. 1 American, geared, plain.	No. 1 Bickett, pl. hand, table 54"x14".
10"x28" Bristol, vertical, with 13" rotary table.	No. 0 Bickett vertical profiler, table 7"x10".
No. 1 U. S. pl. hand, table 64"x23".	

DRILL PRESSES.

25" Weigel, sliding head.	10" Burke sen. bench, cap. 5/16", (8).
25" Silver, sliding head, geared, (8).	9" Western Chief, bench, capacity 1", (8).
20" Silver, plain or geared, (18).	
14" Excelsior, sens., 2 tables, (4).	

POWER METAL SAWS.

Peerless, capacity 13"x16" motor bracket, with speed box.	Peerless, cap. 6"x 6" belted.
Peerless, capacity 9x9", belted.	Economy, 6"x 6" belted, No. 2.
No. 3 Greenerd, with stands, (2).	Economy, 8"x 8" belted, No. 4.

ARBOR PRESSES.

No. 3 Greenerd, (3).	No. 5 Greenerd, with stand.
No. 3-A Greenerd, (4).	No. 10 Greenerd, with stand.

No. 34 Greenerd, with stands, (2).

GRINDERS AND BUFFERS.

No. 2 Woods universal tool & cutter.	14"x4" W. & P. gr. and pol., No. 1&T.
15"x2" Webster & Perks wet tool.	No. 0 W. & P. pol. & bf'ng la's, (8).
No. 4 W. & P. polish. & buf. lathe.	12" Patch, double end, with col.
10" Patch, dbl. end, with col., (8).	18" Patch, double end, with col.

MISCELLANEOUS.

Hammers, 50 & 100 lb. Little Giant.	Shaper, 28" Queen City, crank, grd.
Press, No. 4 Garrison, o. b. i. 2" str.	Shapers, 18" 21" & 24" Hollingsworth, crank, geared.
Shaper, 24" Kelly, crank, geared.	

USED EQUIPMENT.

BOLT CUTTERS.

1" Acme, double-head, with motor.	14" Acme, sgl. hd., pump & pan, (2).
1" Acme, dbl.-hd., oil pump, pan.	Nut taper, 2-spdl. Acme, 14", pan.

DRILLING MACHINES.

Radial, 5' Prentice, gear box, tapping ping attachment, plain.	20" Baker heavy duty, power feed.
Radial, 36" Dresses & Mueller, pl.	24" Colburn hvy. duty, No. 4 Morse.
Radial, 36" Bickford, plain.	24" Barnes, plain, sliding head.
Radial, 24" Fosdick, plain.	24" Cincinnati, pwr fd., sliding hd.
Multiple 8-spindle Foote-Burt.	28" Back geared, power feed, spdl. 1-3/16" hole.

GRINDERS.

126" Bridgeport, cupwheel, knife.	No. 13 B. & S. universal & tool, auto. feed.
B. & S. plain, 12x12", auto. feed.	Diamond, knife, 21" wheel.

LATHES.

48" Niles car wheel turning, journal attachment, m. d.	
28"x14' R. M. & C., h. s., c. r., t. a., 24" 4-jaw chuck.	
24"x15' New Haven, h. s., c. r.	
24"x15' Fifield, solid spindle, plain rest.	
24"x12" S. B. & E., 5" raising blocks, h. s., c. r., 18" 4-jaw chuck.	
16"x 8' Prentice, c. r., h. s., 12" 4-jaw chuck.	
16"x 6' Prentice, h. s., c. r., 12" 4-jaw chuck.	
16"x 6' R. M. & C., h. s., c. r., 12" 4-jaw chuck.	
16"x 6' LeBlond, h. s., c. r., 12" 4-jaw chuck.	
14"x 5' L. & S., h. s., c. r., 10" 4-jaw chuck.	

SECOND-HAND MACHINERY

McCoy-Brandt Machinery Company—Continued.

USED EQUIPMENT.

LATHES—TURRET.

12¹/₂" J. & L., bar and chck'g. equip.
12¹/₂" J. & L., bar equipment.
No. 4 W. & S. w. f., 6-hole round
turret.

MILLING MACHINES.

No. 4 Garvin plain, table 6x30".
No. 3 Cincinnati univ., 12" div. hd.,
driving mechanism for spiral gra.

MOTORS AND GENERATORS.

3 & 20 h. p., 3-60-220 v.
1 h. p., 3-60-220 v.
10 h. p. Fairbanks, 2-60-440 v.
1 h. p., 2-60-220 v., 1800 rev.
10 & 44 h. p., series wd., 220 v., d. c.

PRESSES AND BRAKES.

No. 20 Niagara, arch, 2¹/₂" str., 3200 lbs.
Perkins punch, 2" stroke, 4,500 lbs.
No. 4 Stiles, 1¹/₂" str., 5,000 lbs., pl.
No. 65 Spe'l Toledo (cam), 7 & 4" str.
Punch press, Bliss geared, 8,500 lbs.
No. 4-A Perkins agl. cr., grd., 2" str.

PUMPS.

8¹/₂"x14" Deane deep well, 25 g. p. m.
for motor drive.

PUNCHES, SHEARS AND ROLLS.

12" throat, single, capacity 1¹/₂" arch jaw.
12" throat, double, capacity 1¹/₂x1" Williams-White No. 13.
14" throat, double, capacity 2x1¹/₂", No. 11 Williams-White.
30" throat, single, capacity 1¹/₂x1" Cincinnati.
Guillotine shear, capacity 1¹/₂" rounds, Hilles & Jones.
Guillotine shear, No. 2 Wilder, cap. 1, 1¹/₂" stroke.
Guillotine shear, No. 6 Cleveland, 6" stroke, cap. 4¹/₂" sq.
Guillotine shear, No. 3 Cleveland, 3¹/₂" stroke, cap. 2¹/₂" sq.
Guillotine shear, No. 5 Cleveland, 3" stroke, cap. 2¹/₂" sq.
Guillotine shear, Cleveland, 3" stroke, cap. 2¹/₂" sq.
Slitting shear, rotary, 23" throat, cap. 9", Newbold.
Slitting shear, rotary, 8" throat, cap. 3/16"; 15" throat, cap. 1".
Bevel shear, Thompson, rated capacity 1".
Squaring shear 10¹/₂", capacity 1".
Squaring shear, 8¹/₂" Bertach, capacity 3/16".
Squaring shear, 26" power, capacity 16 ga.
Rolls, 10' Bertach, capacity 14" gauge.

SHAPERS AND PLANERS.

24" Cincinnati, crank, b. g., vise.
24" Queen City, crank, b. g., vise.

20¹/₂"x30"x8" Gray, 1 head.

20¹/₂"x30"x10' American, 1 head.

STEAM HAMMERS.

1000 lb. N.-B.-P. dble. frame, (4).
700 lb. N.-B.-P. dble. frame, (6).

700 lb. Pittsburgh, dble. frame, (3).

600 lb. Morgan, double frame, (7).

MISCELLANEOUS.

Arbor press, No. 5 Greenerd.
Bulldozer, No. 8, 6 & 7 W.-W.
Chucks, lathe and milling machine, new.
Compressors, 9x5x10" Westinghouse steam, (2).
Hoist, No. 3 Canton, floor type.
Hydraulic wheel press, 225-ton Hydro., cap. 33" wheels.
Keyseater, No. 1 Davis, capacity 1".
Pipe machine, 4" Williams, cutting-off tool, dies.
Pipe machine, 8" Jarecki, dies, engine driven.
Pipe machine, 12" Curtis & Curtis, engine driven.
Seamer, 30" double P. S. & W., hand.
Slotter, New York Steam Engine, 26" rotary table, 12" stroke.
Thread roller, 3" Waterbury-Farrell, with dies.

SECOND-HAND MACHINERY

FOR SALE BY

Federal Machinery Sales Company,
10 N. Jefferson St., Chicago, Ill. 212 Sycamore St., Milwaukee, Wis.
USED and NEW Tools.—Immediate shipment.

DRILLING MACHINES.

New Champion 14" plain lever feed upright drills, (2).
New Silver 20" stationary head drills, (6).
New Hoeter 24" sliding head drill, b. g., p. f.
New Richards 24" sliding head drills, b. g., p. f., (2).
New Snyder 28" sliding head drill, b. g., p. f.
New Cleveland 36" sliding head drill, b. g., p. f.
Used 3-spindle Pratt & Whitney sensitive drill.
New Henry & Wright 1, 2, 3, 4 and 6-spindle ball bearing drills, (30).
Used 24" Dreses plain radial drill.

GEAR CUTTERS.

Used 24" Fellows. | Used 36" Fellows.

GRINDERS.

New No. 2 Gardner ball bearing disc grinder.
New Oakley No. 2 universal cutter grinders, one with power feed, (2).
New Ohio No. 2 universal cutter grinders, (2).
Used Saxon horizontal surface grinder, table 36"x12".
Used Pratt & Whitney 6"x48" plain grinder.

LATHES.

New Dalton type B-4, 6"x36" bench lathes on legs, (8).
New Monarch 14"x6" standard engine lathes, (3).
New Monarch 16"x6" standard engine lathes, (3).
New Oliver 16"x7' q. c. g. engine lathe.
Used Flather 17"x6" q. c. g. engine lathe.
New National 17"x6" semi-q. c. g. engine lathe.
New National 17"x6" q. c. g. engine lathe.
New National 17"x8' q. c. g. engine lathes, (3).
Used 17"x10' Lodge & Davis standard engine lathe.
New 18"x6" Hollingsworth standard engine lathe.
New 18"x8" Hollingsworth standard engine lathes, (2).
New National 18"x8" quick change gear engine lathes, (5).
Used Lodge & Davis 18"x8' q. c. g. engine lathe.
New Monarch 18"x10" standard engine lathes, (2).
Used 18"x10' Mueller standard engine lathe.
Used 19"x10' Lodge & Davis engine lathe.
New Monarch 20"x10" quick change gear engine lathes, (2).
New Monarch 20"x10" standard engine lathes, (2).
Used 26" pulley lathe.
Used New Haven 60"x20' bed t. g. engine lathe, with raising blocks to 70".

MILLING MACHINES.

New No. 0 Bristol, hand. | Used No. 2 Cincinnati, plain.
New No. 1 Bristol, hand, (2). | New No. 2 Bristol, hand, b. g.

PLANERS.

Used Gray 24"x24x6', one head. | Used Enterprise 30"x30"x6' planer,
Used New Haven 27"x27"x7', 1 hd. | one head.

PIPE MACHINES.

Used Bignal & Keeler 2". | Used Victor 4".

PRESSES.

No. 18 Bliss, o. b. i., new, (4). | No. 21 Bliss, o. b. i., new, (2).
No. 30 Bliss, o. b. i., new, (6). | C-3 Ferracute, o. b. i., new, (3).

SHEARS.

New Peck, Stow & Wilcox No. 137-A, a foot power squaring shear.
New Peck, Stow & Wilcox No. 223, 52" power squaring shr., for No. 14 gauge.

SCREW MACHINES AND TURRET LATHES.

Used Hartford 4" automatic pin machine.
New No. 4 Southworth plain head screw machine, 14".
Used 3x36" Jones & Lamson, arranged exclusively for chucking, (3).

SHAPERS.

New Barker 16", b. g. crank. | Used Juengst 24", crank.
New Barker 18", b. g. crank. | New Ohio 24", b. g. crank.

SECOND-HAND MACHINERY

Federal Machinery Sales Company—Continued.

MISCELLANEOUS.

Boring mill, vertical, 40" King, 2 heads, used.
Cold saw, No. 3 Burr, used.
Die filer, Handy, motor driven, 110 v., d. c., new.
Hammer, 35 lb. Williams & White, used.
Keyseater, No. 1 Mitts & Merrill, used.
Riveter, No. 3-A High Speed, 8" capacity, new.
The above list is incomplete. Write us, giving specifications of anything required.

FOR SALE BY

F. A. Kauffmann Mfg. Co., . . . 106 S. Second St., St. Louis, Mo.
OIL ENGINE.

Remington upright oil engine, same as new. Apply at the above address for further particulars.

FOR SALE BY

Brownell Machinery Co., . . .
Cutting-off machines, H. & B. 6" accelerated speed type.
Drill, 14" sensitive.
Drill, No. 2 Langelier b. b., new.
Drill, 2-spindle Henry & Wright.
Drill, 20" Snyder, w. & l.
Drop hammer, 200 lbs. plain.
Drop hammer, 400 lbs. automatic.
Gear cutters, No. 3-A Cin'ti., new.
Grinder, No. 1 Morse, new.
Lathe, 9"x4" Seneca Falls, new.

11-13 Eddy St., Providence, R. I.
Lathe, 16"x6' Reed, r. & f.
Lathe, 18"x8' Perkins, new.
Lathe, 20"x10' Perkins, new.
Lathe, 21" Gisholt turret.
Lathe, 24" Gisholt turret.
Planer, 24"x24"x6' Putnam, new.
Planer, 22"x22"x5' Whitcomb.
Planer, 24"x24"x6' Whitcomb.
Press, No. 5 Perkins, single action.
Press, No. 2 Standard broaching and drawing.

FOR SALE BY

Niles-Bement-Pond Company, . . . 111 Broadway, New York
Located at Chicago, Boston and New York

LATHES.

15"x7' P. & W. speed lathe.	16"x8' Von Wyck, quick change.
17" 4-spdl. old style Acme auto.	TURRET MACHINES.
17" Spencer single turret automatic.	24" size I Gisholt, 220 v., d. c., m. d.
22"x24" Jones & Lamson, cone head.	28" Milwaukee turret lathe.

PLANERS.

20"x30"x6' Pond, 2 heads.	73"x54"x10' Pond.
30"x30"x8' Pond, 2 heads.	72"x72"x18' Pond.
30"x30"x10' Pond, 2 heads.	

DRILLING AND BORING MACHINES.

60" Niles gooseneck drill.	Radial, 5' Niles semi-univ.
14" 4-spindle turret drill.	Radial, 6' Niles semi-univ.
17" 4-spindle gang drill.	2" sp. old style horizontal boring and drilling machine.
3" Grant radial drill and boring mech.	

MISCELLANEOUS.

Blower, steel pressure, No. 10 Sturt- event.	Grinder, wet saw, No. 1 Tindel.
Boring mill, horiz., 4" spindle, 9' table, Bement.	Grinder, cutter, No. 1 Cincinnati.
Gear cutter, spur, 42" Bement.	Grinder, wet. dbl., 24" cup wheels.
Gear planer, bevel, 42" Gleason, old style.	Grinder, 16x66 No. 4 Landis univ.
	Miller, No. 3-H LeBlond universal.
	Saw, cold, P. & W., 8" capacity.

SECOND-HAND MACHINERY

FOR SALE BY

**Riverside Machinery Depot, 25 St. Aubin Ave., Detroit, Mich.
Telephone, Edgewood 1582**

NEW LATHES.

- 24" x 12' Springfield Ideal h. d. engine lathe.
- 18" x 8' Springfield Ideal g. h. tool lathe.
- 16" x 6' Filsmith q. c. lathe, (2).
- 15" x 6' South Bend standard lathes, (3).
- 7" x 12" Precision bench lathe, Potter.

NEW SHAPERS AND MILLERS.

- 25" Springfield h. d. b. g. cr. shaper.
- 16" Springfield b. g. cr. shapers, (2).
- 24" Milwaukee b. g. cr. shapers, (2).
- 20" Milwaukee b. g. cr. shapers, (2).
- 16" Milwaukee b. g. crank shaper.
- 20" Columbia crank shapers, (2).

NEW GRINDERS AND PLANER.

- No. 4 Clizbe bench casting gr., (2).
- No. 3 Clizbe casting grinders, (8).
- No. 2 Clizbe casting gr., on st., (3).
- No. 3 Champion bench casting gr.
- No. 0 Champion bench casting gr., (3).
- W. & M. Yankee drill grinders, (2).
- No. 1 Thompson univ. tool & cutter.

NEW HAMMERS

- 50 lb. Mayer power hammer.
- 25 lb. Mayer hammer.
- 20" Milwaukee w. & l. f. drills, (7).
- 20" Champion b. g. p. f. drill.
- 14" Champion drills, (2).
- No. 32-D 14" Demco h. s. drill.
- No. 31-C h. s. drill.
- No. 22 Demco, h. s. bench drills, (2).
- 14" Excelsior drill.

NEW PRESSES.

- No. 3 Sidney presses, (2).
- No. 2 Sidney belted presses, (4).
- No. 1 Sidney belted presses, (4).
- No. 0 Atlas arbor presses, (3).
- No. 3-A Atlas arbor presses, (2).

- No. 4-M Atlas press.
- No. 1 Springfield straight'g press.
- No. 0 Springfield straight'g press.
- No. 00 Springfield straight'g press

USED LATHES.

- 28" x 14' Fay & Scott.
- 26" x 14' P. & W. standard.
- 24" x 12' Perkins, blocked.
- 21" x 10' Porter standard.
- 20" x 10' W. & B. gear head lathe.

- 18" x 8' Le Blond.
- 16" x 8' L. & S. q. c.
- 16" x 8' Porter standard.
- 16" x 8' American, q. c.
- 84" Fitchburg Lo-Swing lathe.

USED TURRET AND SCREW MACHINES.

- 18x6 Springfield Fox b. g. turret lathe.
- 14x5 Hendey turret lathe.
- 12x4 Warner & Swasey turret lathes, (3).
- 12x4 Bardons & Oliver turret lathe.
- 12x4 Pearson turret lathe.
- 11" No. 107 Wells & Son turret lathes, (2).
- 28" Niles-Bement-Pond rigid turret lathe.
- 14" Warner & Swasey turret lathe.
- 3x36 Jones & Lamson flat turret lathes, (2).
- No. 2 Warner & Swasey hand screw machine.
- No. 2 S. & K. hand screw machine.
- No. 3 S. & K. screw machines, (2).
- 4" Cleveland automatic screw machine.
- 2" Cleveland automatic screw machines, (2).
- No. 515 National Acme 4-spindle automatic.
- No. 52 National Acme 4-spindle automatics, (4).
- No. 53 National Acme 4-spindle automatic.
- 4 Gridley automatic.

SECOND-HAND MACHINERY

Riverside Machinery Depot—Continued.

USED SHAPERS AND MILLERS.

16" Fox crank shaper.
16" Hendey geared shaper.
16" Hendey fric. metal shapers, (5),
Warner & Swasey miller.

USED GRINDERS AND PLANERS.

No. 3 Detroit floor casting grinder.
1½x16" Standard low floor casting
grinder.
No. 14 dbl. end pedestal casting gr.
Iron Foundry Builders pedestal
casting grinder.
16" Casting grinder on stand.
American drill grinder.
W. & M. tool drill grinder.
Washburn drill grinder.
Yankee drill grinder.
No. 20 Landis plain external grinder.
No. 60 Heald cylinder grinder.
No. 2½ Woods univ. tool and cutter.
Cutter and reamer grinder.
6-A Gorton universal disc grinder.

USED HAMMERS AND DRILLS.

25 lb. Standish foot hammers, (2).
14" Henry & Wright h. s. drill.
16" Fox drill.
10" No. 0 Barnes friction drills, (2).
No. 1 Burke bench drill.
40" American radial.

USED GEAR CUTTERS.

3½ B. & S. auto. spur and bevel.
4½ B. & S. auto. spur & bevel, (4).

HEAT TREATING EQUIPMENT.

New No. 12 Eagle carbon steel furnace.
New No. 14 Eagle carbon steel furnace.
New No. 20 Eagle high speed furnace.
No. 3-A used Frankfort furnace.
No. 6 used Stewart lead hardening furnace.
No. 3-A used Bellevue carbon steel furnace.
New No. 35 Connerville pressure blowers, (2).
New No. 40 Connerville pressure blowers, (2).
New No. 50 Connerville pressure blower.
New No. 60 Connerville pressure blower.
Complete Brown h. r. high resistance pyrometer equipment, complete with
recorder.

USED PRESSES.

No. 1½ Consolidated, o. b. i.
No. 0 Consolidated, o. b. i.
No. 267 Consolidated, d. a., geared.
Waterbury Farrel, straight sided.
No. 19 Bliss o. b. i.
No. 4 Niagara, o. b. i.
No. 02 Bliss power press.
Steam and Gas Engines, Electrical Equipment, Furnaces, Tanks, Woodworking
and hundreds of other machines too numerous to mention.

Send for our new Stock List.

FOR SALE BY

Swind Machinery Co.,

Widener Bldg., Philadelphia, Pa.

ROTARY SHEAR—NEW.

Rotary ring and circle shear, capacity No. 10 gauge, circles 10" to 60" diameter, cutters 5".

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.
BORING MILL.

48" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.

LATHES.

13"x 6' South Bend, c. r., h. s., new.

14"x 6' Flather, c. r., h. s., used.

15"x 8' South Bend, c. r., h. s., new.

16"x 8' South Bend, c. r., h. s., new.

16"x 8' Walcott, q. c. g., d. b. g., c. r.
h. s., new.

20"x10' Walcott, q. c. g., d. b. g., c. r.
h. s., new.

16"x 8' American, q. c. g., used.

20"x10' Walcott & Wood, h. s., cpd.
r., used.

20"x8' Oakley, d. b. g., not screw
cutting, used.

14"x 6' Fitchburg s. s. p. r., used.

14" Pierce plain head, turret, new.

22" Davis, b. g. turret, used.

DRILLING MACHINES

No. 1 Burke, bench, with chucks,
new.

No. 28 Western Chief, bench, new.

14" Excelsior 2 tables, new.

2 spindle Kern, b. b., cap. 8", 16"
swing.

24" Dresser simplex radial, with tap-
ping attachment.

34" No. 101 C-O radial new.

20" Silver, s. b. w. & l. new.

20" Silver, s. b. b. g. p. f., new.

20" Excelsior, s. b. b. g., p. f., new.

24" Bickford, s. h., lever, used.

26" Aurora, b. g., p. f., new.

30" Prentice, s. b. s. h., p. f., used.

24" Bickford, s. h., b. g. & p. f.

SHAPERS.

16", 20" & 24" Milwaukee, b. g., latest improved, new.

14" Steptoe, single gear, used.

SCREW MACHINES.

No. 3 Smurr & Kamen, plain head, new.

No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.

Wood, Tilted Turret.

MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.

No. 3 LeBlond plain, with dividing head, used.

No. 3B Owen plain, with vertical attachment and dividing head, used.

No. 3 Garvin, hand, used.

No. 2 Pratt & Whitney, Lincoln type.

PRESSES.

No. 1 Bauroth, o. b. i., new.

No. 3 Loshbough-J., o. b. i., new.

No. 4 Loshbough-J., o. b. i., new.

No. 3 Koehler, o. b. i., used.

SAWS.

Nos. 1 & 2 Marvel, draw cut, new.

1 No. 1 Racine high speed, new.

GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.

Nos. 1, 2 & 3 St. Louis, d. e., new.

No. 20 Safety E. W. Co., elec. (4).

U. S., electric, 110 v., d. c., bench.

Heald, ring, 8", used.

Essley, cylindrical.

No. 1 La Salle plain and surface,
new.

COMPRESSORS.

6x6 Star vertical, belted, single cyl-
inder, double acting.

MISCELLANEOUS.

Planer, 36"x38"x12' Patch, o. s., 1 hd.
on cross rail, 1 head on side, used.

Rivet spinner, 4", Grant, bench.

Large stock of tinner's tools.

CHUCKS.

5", 7½" & 9" 3-jaw Sweetland, scroll,
new.

12" 4-jaw Simplex, ind., new.

8" & 12" 4-jaw Sweetland, ind., new.

12" 3-jaw Manufacturers Equipment
Co. air chucks, used.

5", 6", 7½", 9" 3-jaw Cushman, univ.,
used.

16" 4-jaw Wescott, combination, cut-
ting off.

No. 18 National Acme, s. o., die hd.

20" 4-jaw Whiton, ind., used.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago

In stock for immediate delivery.

DRILLING MACHINES.

Rockford bench.	20" Barnes all geared.
10" W. F. & J. Barnes, friction.	25" Prentice, s. h., p. f.
14" Washburn sensitive.	24" Fosdick radial.
14" Rockford sensitive.	5" Fosdick & Halloway radial.
Allien single spindle ball bearing.	6" Gang radial.
Taylor & Fenn sgl. spdl. high spd.	14" Leland-Gifford 3 spindle.
16" Cincinnati.	B. F. Barnes 2 spindle.
20" Mechanics, friction.	12" Leland-Gifford 4 spindle, b. b.

GEAR CUTTERS.

No. 2 Standard.	
24"x 7" Gould & Eberhardt, for spur gears.	
30"x 8" Gould & Eberhardt, for spur gears.	
72"x18" Newton, for spur and bevel gears.	

No. 3 Farrell hobber.

GRINDERS.

No. 1 Cincinnati, universal tool and cutter.	
6"x20" No. 10 Brown & Sharpe cylindrical.	
12"x48" Modern cylindrical.	
10"x24" No. 21 Landis cylindrical.	
No. 2 Landis cylindrical, universal.	
No. 6 Modern internal.	
No. 7½ Gardner, disc.	

LATHES.

12"x 7" South Bend, compound rest.	
14"x 6' Flather, compound rest, taper.	
18"x 6' Bradford, compound rest	
24"x12" Schumacher & Boye, compound rest.	
24"x12" Rahn-Larmon, compound rest, double back gear.	
28"x18" New Haven, compound rest	
37"x18" Fifield, compound rest.	

MILLING MACHINES.

No. 6 Whitney, hand, dividing head.	No. 3 Becker vertical.
No. 2 Cincinnati plain.	No. 5-C Becker, vertical.
No. 2 Le Blond plain.	No. 14 Pratt & W. 2 spindle profiler.
No. 3 Owen plain.	Eynon-Ingersoll slab miller.

PUNCHES AND PRESSES.

No. 3 Bauroth, o. b. i.	
No. 3 Massillon, o. b. i.	
No. 4 Loshbough-Jordan, o. b. i.	
No. 5½ Perkins sprue cutter.	
No. 2-P American Can.	
No. 16 Bliss horn press.	
No. 39 Bliss horn press.	
No. 2-A Bliss double crank geared press, 10" stroke.	
No. 4-T American Can double crank geared press, 6" stroke.	
No. 205H Toledo crank geared press (new), gap pattern, 96" bet. housings.	
No. 3 Ryerson geared punch, 1" x 1".	
No. 7 Massillon, single end punch and shear, 36" throat, arch. jaws, capacity 1½" thru 1", new.	

SCREW MACHINES.

No. 2 Foster, plain head, a. c. & w. f.	
No. 2 Acme, plain head, a. c. & w. f., power feed to turret.	
No. 6 Foster, friction, a. c. & w. f., power feed to turret.	
1½"-2" Cleveland automatic, plain.	
No. 2 Foster, friction head, a. c. & w. f., power feed to turret.	

MISCELLANEOUS.

Boring mill, 60" Bullard, 2 swivel hds.	Shaper, 16" Baker, vertical.
Metal slitter, Gray.	Tapping machine, No. 2 Garvin.

SECOND-HAND MACHINERY

FOR SALE BY

Simmons Machine Co., Inc., Albany, N. Y.
1001 Singer Bldg., New York **358 Ellicott Square, Buffalo**
804 Dime Savings Bank Bldg., Detroit

Equipment for Immediate Delivery

MILLERS.

No. 2 Owen plain.

No. 3-B Owen plain.

No. 3-H LeBlond universal, new.

GRINDERS.

No. 5 Brown-Sharpe universal.

No. 3, 4, 5, self-contained c. s. new, (2).

No. 23 Brown-Sharpe internal.

Dumore Junior elec. tool, new, (3).

No. 2 Norton universal tool-cutter.

Springfield wet grinder.

Dumore electric, new, (8).

1", 1", 1" and 1" emery stand.

LATHES.

14"x 8' Putnam.

24"x 10' Flather.

14"x 6' Lodge-Shipley.

26"x 8' Reed.

16"x 6' Reed.

28"x 12' Boye & Emmes.

18"x 6' American.

30" English lathe.

20"x 8' American.

34"x 18' Pond.

20"x 8' Fitchburg.

38"x 14' David W. Pond.

20"x 8' Pond.

42"x 12' Fifield, triple geared, (3).

20"x 10' Monarch, new.

24"x 36" Marvel lathes, (2).

PLANERS.

Used 38"x 38"x 8' 6" Planer, one rail head, one side head.

Reliabuilt 39"x 33"x 10 Cincinnati, one head.

New Model "B" 42"x 42"x 12' openside, one rail head, one side head.

Reliabuilt 60"x 48"x 12' Lincoln, 4 heads, Sellers spiral gear drive.

Reliabuilt 66"x 52"x 12' 8 planer, two heads.

Reliabuilt 73"x 48"x 12' Lincoln, 4 heads, Sellers spiral gear drive.

Used 14' Hilles-Jones plate planer.

DRILLING MACHINES.

Moline "Hole Hog", (3).

U. S. portable electric radial.

3' Dresses plain radial.

No. 36-20" Canedy-Otto stationary head, new.

5' Bickford plain radial.

14" Sensitive drills, (2).

7' 3" Warren semi-universal radial.

No. 101 Canedy-Otto 31' radial, new.

3-spindle Sipp high speed sensitive.

No. 1 Burke bench drills, new, (3).

26" Barnes, sliding head, (3).

AUTOMATICS.

2" Cleveland Model "A" 5-hole turret, (2).

1" National Acme auto., four spdl.

2" Cleveland auto., 5-hole turret, (2).

No. 55 National Acme auto., (2).

SCREW MACHINES AND TURRET LATHES.

2"x 31" Jones-Lamson with bar and chucking equipment.

No. 32 Garvin turret lathes, (1).

3"x 36" J. & L., bar and chuck, (2).

20"x 8" Bridgeport turret lathe.

BORING MILLS.

Conradson turret lathe, 24" swing.

No. 31 Lucas horizontal.

Bement horizontal, 24" bar

34" King vertical, swing 36".

48" Niles car wheel borer.

MISCELLANEOUS.

Arbor press, Greenerd No. 5.

Presses, foot, Perkins, (2).

Broaching mch., No. 2 J. N. Lapointe.

Pump, Gould triplex, with motor.

Dictaphones—Ediphones (8), and 1

shaving machine with motor

Gear cutter, No. 2 Whiton.

Sawing, filing and lapping machine,

Hack saws, No. 1 Racine hi-spdl., (8).

Oliver, new.

Pipe machine, 2" Jarecki No. 7.

Shear, Lenox rotary bevel.

Pipe machine, 8" Cox.

Shear, 36" Q. C. power squaring.

Press, No. 3-W Bliss.

Shear and punch, 24" Niagara deep

Presses, power, Nos. 1, 2, 3 Sidney,

throat, hand lever.

new, (2).

Time clocks, International, (3).

WOOD-WORKING MACHINERY.

Band saw, 36".

Sander, vertical.

Borer, universal.

Sander, 3-roll drum, Fay & Egan.

Jointer, 16" Greaves-Klusman.

Saw table, iron frame.

Planer, pony, 24".

Shaper, 2 spindle.

Router, New Britain No. 2 chain.

Swing saw.

SECOND-HAND MACHINERY

FOR SALE BY

W. J. Baird Machinery Co., 265 Jefferson Ave., Detroit, Mich.

Desirable Tools for Immediate Delivery

DRILL PRESSES.

- 24" Aurora, sliding head, b. g., power feed, s. h.
- 20" Silver, power feed, b. g., new, (4).
- 20" Silver, wheel and lever feed, new, (6).
- 20" plain Canedy-Otto, wheel and lever feed, new, (4).
- 3' Prentiss cone driven radial, used.
- 2-spindle Demco h. s. ball bearing, floor type, new.
- Single spindle Demco ball bearing, bench type, new.
- 2-spindle Demco h. s. ball bearing, floor type, new.
- Lindgren 15" gear driven sensitive, new, (2).
- U. S. sensitive, sliding head, tilting table, (4).
- 20" Excelsior, plain wheel and lever feed, automatic stop, (2).

GRINDERS.

- No. 2 Bath universal, complete with regular equipment, s. h., good condition.
- No. 1 Wilmarth & Morman univ. cutter and reamer, power feed, new, (4).
- No. 1 Wilmarth & Morman cutter and reamer, hand feed, new, (4).
- No. 2 Wilmarth & Morman automatic surface grinders, new, (2).
- No. 1 LaSalle surface grinders, new, (3).
- No. 1 Fraser universal, complete with internal grinding attachment, new.
- New 18" No. 7 Valley City double end disc grinder.

SCREW MACHINES.

- 1½" 5-hole turret Cleveland automatic, used.
- No. 5 Foster, geared head, single pulley drive, used.
- 1½" Star hand screw machine, used.
- 2" National Acme 4-spindle automatic, new.

MILLING MACHINES.

- No. 2 Van Norman duplex, new, (2).
- No. 1 Rockford plain, cone type, new.
- No. 2B Rockford universal, cone type, complete with regular equipment, new.
- No. 2 plain h. d. cone type Rockford, new.
- No. 2 universal high power all-gearied Rockford, new.
- No. 2½ universal high power all-gearied Rockford, new.
- Lambert horizontal all-gearied, 3" bar, new.
- U. S. hand miller, new.

PUNCH PRESSES.

- No. 1 V. K. V. inclinable.
- No. 3 Loshbough Jordan open back inclinable, new.
- No. 4 Loshbough Jordan open back inclinable, new.
- No. 5 Loshbough Jordan geared open back inclinable, new.
- No. 2 Moore screw press.

SHAPERS.

- 20" Milwaukee back geared crank shapers, new, (2).
- Columbia 20" b. g. crank shaper, new.
- Queen City crank shapers, b. g., new, (3).
- 24" Hollingsworth crank shaper, b. g., new.
- No. 163 Rhodes combination vertical and horizontal crank shaper.

PLANERS.

- 22" x 22" x 5' Wheeler planer, s. h., fine condition.
- 42" x 12" x 10' Davis & Egan planer, used.
- 30" x 30" x 8' Gray planer, used.
- 36" x 36" x 20' Gray planer, used.
- 48" x 60" x 20' Cleveland open-side planer, used.

PUNCHES, SHEARS AND ROLLS.

- 2-New 30" Pettengill rotary shears.
- 1-Set 10' Hillis Jones bending rolls, used.
- 1-Set 36" Niagara pyramid type bending roll.
- 1-Set 20" Niles plate bending rolls, used.
- 2-Sets Pettengill forming rolls, new, (2).

SECOND-HAND MACHINERY

FOR SALE BY

E. L. Essley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

12" Rockford upright.
No. 1 single spindle Avery.

GRINDERS.

No. 1 Cincinnati, universal.
No. 1 Norton full univ. tool & cutter.
No. 1 Le Blond univ. tool & cutter.

LATHES.

11"x 5' Star.
13"x 6' Sebastian.
16"x 8' Advance, q. c. g.
18"x 10' Prentice Bros., taper att.

25" Aurora, sliding head.
No. 11 Natco multiple drills, (2).

6"x 32" Norton plain.
No. 2 Bath universal.
No. 1 Besly disc.

SCREW MACHINES.

No. 00 Brown & Sharpe auto, (2).
Cleveland automatics, (2).
No. 5 Pearson, hand, fric. head.
No. 1 Foster, plain head, cap. 13-16".

MISCELLANEOUS.

Air comp., 6x6 Curtis, Model "A".
Boring mach., 34" Binsse horizontal.
Boring mill, 36" Bullard.
Boring mach., No. 0 Fosdick.
Cold saw, No. 11½ Higley.
Gear cutter, No. 12 B. & S. auto.
Gear hobber, No. 3 Barber-Col., (5).

Miller, vert., No. 4 Becker-Brainard.
Miller, No. 1-B K. & T. univ.
Pipe machine, 2" Williams.
Planer, 42"x 42"x 8" Whitcomb.
Punch, No. 16C New Doty, sgl. end.
Punch press, No. 76 Toledo, o. b.
Turret lathe, 2"x 24" J. & L.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 3 American Can, o. b. i.
No. 4 Consolidated.
No. 3-P Ferracute, solid back.

DRILL PRESSES.

23" Rockford, stationary head.
39" Bickford, sliding head.
42" Barnes, sliding head.

ENGINE LATHES.

10"x 34" Davis.
16"x 12" Beaman & Smith.
24"x 10" Putnam.

GRINDING MACHINES.

14" Norton, floor, (2).
14" Safety Emery Wheel, floor.
22" Springfield, double wheel, floor.
Springfield, dbl. wheel, water.

MILLING MACHINES AND PLANERS.

No. 1 Clough vert., rotary table.
No. 3 Cincinnati plain.
23"x 22"x 5" Ingersoll slab.

25"x 25" Blaisdell.
25"x 10' Fifield.
Niles double axle lathe.

MACHINES.

No. 2 Leland & F., water.
No. 38 Safety Emery Wheel Co.
plow grinder.
10x30" Landis plain.

SCREW MACHINES.

7-16" Cleveland, friction feed.
1" Cleveland, friction feed.
1" Cleveland, friction feed.
1" Cleveland, jigger feed.

MISCELLANEOUS.

Die filing machine, Simplex.
Gas engine, 35 h. p. Columbus.
Gas engine, 55 h. p. Bruce McBeth.
Hammer, 500-lb. Sandage.
Hobber, No. 1 Farwell.

1" Hartford, (3).
1" Cleveland.
1" LaVigne.
1" Cleveland, semi-automatic.

Keyseater, No. 3 Mitts & Merrill.

Oil gas generator, No. 3 American.

Saw, No. 58 Nutter-Barnes.

Turret lathe, 24"x 26" Greenlee.

Turret lathe, 20" Fay & Scott.

SECOND-HAND MACHINERY

FOR BY SALE

Cyril J. Bath & Co.,

721 St. Claire Ave., N. E., Cleveland, O.

Stock now on hand.

AUTOMATICS.

P. & J. 7"x16" large arm auto. chucking machine, very fine shape, low priced.
18" 2 & 4" Gridley single spindle automatics, in fine condition.
No. 33 New Britain auto. chucking machines, five stations and tapping spindle, handle work up to 28" diameter in chuck jaws and 54" swing outside chucks, very good. (3).

BAR STOCK MACHINES.

No. 4 Warner & Swasey screw machine, wire feed, friction back grd., power feed to turret, large equipment, collets and round turret; good.
14" Universal 5-spdl. automatics with large equipment; good condition, (2).
44"x30" Bardons & Oliver, with all geared head, motor driven, with motor, capacity up to 4 13-16" stock, large equipment; excellent condition.

BORING MILLS.

42" Niles-Bement-Pond, one turret, one plain head, late model, fine shape.
42" Bullard, double swivel head, rapid production type, good condition.
51" Niles double swivel head with 4-face plate jaws, friction feed, table and all parts in fine shape.

4-spdl. Foote-Burt vert. cylinder boring mch. with sp. adj. in pairs, 4" fixed centers, 5" min. adj. bet. inside spds.; cone dr.; table fd.; excellent shape.

BULLDOZER.

Ajax No. 7 hi-speed, steel bed, 16" stroke, late model, ram face 6' 4"x12", gearing ratio 16: 1; 30 strokes per min., double geared; fine; with motor.

DRILLING MACHINES.

2-Spindle 14" Henry & Wright sens. ball bearing drill. Table 17"x12".
3" Mueller plain radial drill; good condition.
3" Fosdick plain radial, cone drive, gear feed, very good.
No. 11 Natco 8-spindle multiple, can be used with 10 spindles. Max. drilling area 12"x1"; min. 4"x4", belt feed; fine shape.

GEAR CUTTER.

26" No. 3 Brown & Sharpe plain spur, with all parts; very good condition.

GRINDERS.

Bristol 15" vertical round surface grinder.
Landis No. 23 plain, 16"x42", with heads if desired, for crankshaft grinding; good condition.
No. 60 Heald cylinder grinder, very good condition.

LATHES.

14"x6" Prentiss, comp., one chuck, loose change gears; very good.
24"x10" American production lathe, good condition.
24"x11" Johnson, gear fd., comp. r., hollow spindle, complete; good condition.
24" Gisholt turret, late model, motor dr. t. a., large equip., very fine cond.

MILLERS.

No. 00 Brown & Sharpe plain hand miller; good.
No. 6 Whitney plain hand miller; good.

PLANERS.

24"x24"x6" Putnam, single head, light model; good shape.
36"x36"x14" Pond, single hd., in good condition, with table 6" thick, no broken T slots or pegged gears; a good rugged tool.

PRESSES.

No. 2 Waterbury Farrell rack and pinion press, 25" stroke, weight about 7,500 lbs.; very good condition.
Niagara No. 4, No. 5 & No. 6 inclinable presses, standard; all new.

SAWS.

No. 2 heavy friction Ryerson saw, 35 h. p. motor, capacity 15"-60 lb. beam, continuous cutting, length of str. 30", wt. 6000 lbs., good; 220 v., 60 cy., 3 ph.
No. 3 Ryerson friction saw, motor dr. and feed cap. for 24" beams or equal, 45-90 h. p. motor, weight about 12,000 lbs.; 220 volt, 60 cycle, 3 phase motor.
6" and 9" Peerless high speed saws in stock; new.

MISCELLANEOUS.

Gear testing machine, Brown & Sharpe.
Running balance machines, Norton, for balancing crankshafts, armatures, and similar running parts, almost new and motor driven, (2).

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co., 124 S. Clinton St., Chicago, Ill.

Special Bargains

MILLERS AND GRINDERS.

- No. 2 Brown & Sharpe plain.
- No. 2 Osterlein univ., vert. attach.
- No. 2 Brown & Sharpe univ. grinder.
- U. S. hand miller.

PLANERS AND SHAPERS.

- 26"x26"x 6' New Haven.
- 25" Milwaukee, b. g.
- 28" Smith Mills, geared.

51"x11"x13' New Albany.

20" Hendriksen, geared.

18" Barker, b. g.

Knight drill and milling machine.

TURRET LATHES AND SCREW MACHINES.

- No. 6 Foster, (3).
- No. 6 Foster, air chuck.
- 20 Dreses Fox turret.

Jones-Lamson 3", single pulley.

Jones-Lamson 2", single pulley.

4" Pearson.

LATHES.

- 22"x1' American, quick change, with turret, single pulley.

26"x14' Davis.

36"x16' Putnam.

MISCELLANEOUS.

Band saw, metal, 30" Klemm.

Drill, 8-spindle gang, P. & W.

Brake, power, 8', 8 ga.

Radial, 43" Mueller.

Filing machines, Cochrane-Bly, (2).

Shear, pwr. square, 6' Bertsch. 10 g.

Drill, 10-spindle Nadco

Shear, sq., 10' Niagara, ft. p., 20 g.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x 6' Blaisdell, r. & f. rest.

7"x3' Dalton, c. r., on stand.

14"x 6' Flather, p. r.

10"x 4' Pratt & Whitney, r. & f., t.

18"x10' Springfield, c. r., 5-step cone.

a., draw-in attach., collets, pan bed.

18"x10' LeBlond, c. r. & t. a., 5-step

cone, (2).

16"x 6' Goddard, r. & f. rest.

14"x12' Walker, p. r., with raising

TURRET LATHES.

24" Davis turret boring & chucking lathe, with vert. forming attach.

14" Lodge & Davis, plain head.

SCREW MACHINES.

2" Cleveland full automatic.

No. 33 New Britain multiple spindle

No. 90 Brown & Sharpe automatic.

automatic.

1" Hartford full automatic.

4" Pratt & Whitney screw machine

2" Hartford full automatic.

complete.

GRINDERS.

Warner & Swasey cock grinder.

Greenfield univ. cutter & reamer.

Type "DE" Hisey-Wolf internal.

20" Whitney wet tool.

HAMMERS.

Coffman, post, power dr., 25 lbs., c. s.

100 lb. Cady, belt drop, c. s.

No. 2 Whiton automatic.

26" No. 3 Brown & Sharpe auto.

26" No. 4 Brown & Sharpe auto.

36" Fellows gear shaper.

GEAR CUTTERS.

Mitts & Merrill, square frame.

No. 2 Mitts & Merrill.

MISCELLANEOUS.

Arbor press, No. 2 Greenard.

Saw sharpener, No. 10 Cochrane-Bly

Cold saws, 12" Burke, (2).

automatic.

Cold saw, Higley.

Shears, 30" Niagara foot-power

Drill, 5 spdl. Detroit semi-auto.

squaring.

Drill, sgl. spdl. Leland, ball bearing.

Shear, 62" Niagara No. 362 power

Filing machine, Simplex.

squaring.

Lathe, Resek, double end.

Shear, No. 183 P. S. & W. power

Punch, foot power.

squaring.

Punch press, No. 20 Bliss plain fly-

wheel.

Welder, No. 4-A 110 volt Federal.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Company, - 35th & Iron Sta., Chicago, Ill.

SHEARS.

Weiner & Pels steel plate angle and I-beam shear, for 15" beams.
Single end shear, 22" throat, punches 1 $\frac{1}{2}$ " thru 1".
Single end shear, 11" throat, shear 8" x 1 $\frac{1}{2}$ ".
Single end punch, 27" throat, punches 1 $\frac{1}{2}$ " thru 1".
Double end punch, Long & Alistatter, 24" throat one side, 8" throat at other side, capacity 1" thru 1".

ENGINE LATHES.

14" x 6' Springfield.
16" x 6' Fay & Scott.
17" x 20' Linderman double spindle shell lathe.
18" x 12' New Haven.
20" x 8' Pond.
24" Potter & Johnston.

PUNCH PRESSES.

No. 4 Bliss, solid back, b. g.
Queen City, solid back, 5 $\frac{1}{2}$ " throat.
Queen City, solid back, 9 $\frac{1}{2}$ " x 9" horn.

BENDING ROLLS.

12' Niles bending roll for 2" plate.
Power bending rolls, 10' long, for 3/16" plate.
Boilermakers' plate flanging clamp, 12' long.

SHAPERS.

Pedrick & Ayer, open side, traveling head, 20" stroke.
30" x 30" x 8' Putnam planer.

DRILL PRESSES.

Bausch 8 spindle universally adjustable sliding head multi-spindle drill.
6 spindle Woodward & Rogers, 1" capacity.
20, 26 and 28" upright drills, (3).
2 spindle Hoefer adj. gang drill, No. 5 Morse taper in spds., table 18" x 56".

MILLING MACHINES.

New 48" swing No. 6 Becker latest model univ. improved stand. vert., (2).
48x36x12 planer type Ingersoll slab miller.
Garvin No. 3 hand millers.

PIPE MACHINES.

4" Armstrong pipe machine. | 4" Merrill pipe machine.

SCREW MACHINES.

1" Kempsmith hand screw machine. | 4" Pratt & Whitney double spindle
1 $\frac{1}{2}$, 2" and 2 $\frac{1}{2}$ " Cleveland automatics. | automatic.

HAMMERS.

50-lb. Novelty trip hammer.

BORING MILLS.

8' Michael vertical boring mill, single head on rail.

MISCELLANEOUS.

Buffing stands, (20).
Cold saw, No. 21 Higley.
Cold saw, Q. & C., for 8" rounds.
Gate shear or multiple punch, 60" Queen City.
Gear cutter, 60" Niles semi-automatic spur.
Gear hobber, No. 5 Lees-Bradner.
Grinders, double end heavy floor, for 24x4" wheels.
Grinder, Middleditch combination drill and tool.
Hydraulic presses, 60 and 80 ton, vertical.
Keyseater, 1" Morton.
Nut tapper, No. 4 Roald automatic.
Shear, Lenox serpentine.
Steel brake, Dreis & Krump, 10', for 18 gauge.

SECOND-HAND MACHINERY

FOR SALE BY

B. C. Allen Machinery Co.,

Band saw, metal.....	\$ 125.
Blower, No. 4 Buffalo.....	30.
Boring machine, Hoefer 2 sp.....	1700.
Boring machine, 48" car wheel.....	1000.
Bolt cutter, 14" Acme.....	150.
Brakes, 4' 865; 5'.....	80.
Chucks, 6, 9, 10, 14, 15".....	
Drill press, 14" sensitive.....	35.
Drill press, 20" w. & l.....	75.
Drill press, 24" sliding head.....	125.
Drill, radial, 4".....	350.
Keyseaters, Nos. 1 & 2 Davis.....	
Lathe, 13"x5" Barnes, c. r., c.f.....	150.
Lathe, 14"x 8' Flather.....	300.
Lathe, 16"x 8' L. & Davis.....	350.
Lathe, 2x24" J. & L., grd. hd.....	650.
Lathe, 18"x8" Barnes, c. r., c.f.....	550.

104 S. Clinton St., Chicago

Lathe, 20-28x14' gap.....	\$ 900.
Lathe, 32"x14'.....	400.
Lathe, 36"x16' triple geared.....	2000.
Miller, No. 2 P. & W., hand.....	175.
Miller, No. 2 Kempsmith pl.....	950.
Miller, No. 1½ Rockford plain.....	725.
Pipe machine, 2".....	100.
Pipe machine, 2" Jarecki.....	125.
Planer, 24"x24"x4½".....	400.
Planer, 36"x36"x10' N. Haven.....	900.
Punch press, No. 41 Toledo.....	125.
Punch presses, Nos. 2, 3 and 4.....	
Shaper, 12" Smith & Mills.....	250.
Shaper, 20" Smith & Mills.....	1100.
Shear, 36" square.....	40.
Shear, 10' Niagara, 20 gage.....	300.
Screw machine, 2½" Foster.....	900.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio

LATHES.

9" to 13" Barnes, h. s., cp. r., new.....
13-15-16 and 18 O. & S., h.s., c.r., new.....
13"x 5' LeBlond, hollow spindle.
14"x 6' Hamilton, h. s., comp. rest.
18"x 8' Fitchburg, hol. spdl., cp. r.

TURRET LATHES AND

1" Garvin hand screw mach ne.
1½" S. & K. hand screw mchne., (3).
1½" Tilted turret hand screw mchne.

SHAPERS AND PLANERS.

14" Niles, traveling head.
16, 18 & 24" Barker, back gear crank.
20" Walcott, geared shaper.
22"x22"x 6' Gray, 1 head.

PRESSES.

No. 5 Garrison, o. b. i.
No. 2 Sidney o. b. inclinable, 1600 lb.
No. 4 Toledo, o. b. inclinable.
No. 32-P Toledo, nearly new. (5).

DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.
8-spindle, gang, adjustable centers.
3½" Canedy-Otto plain, new.
4" Baush plain, heavy pattern.
4½" Universal, cone drive.

MILLING

No. 1½ Valley City universal.
No. 4 Cincinnati plain.
No. 1½ American plain.

GRINDERS.

12"x36" Hartford, surface, new.
Landis 10x24 universal.
Litter 10x20 universal.

MISCELLANEOUS.

Balancing machine for pulleys.
Band saws, metal, 30" Wright, (2).
Boring mill, 12", 2 swivel heads.
Boring mill, 32" Colburn, turret hd.
Dozers, No. 25 W. & W.
Compressor, 8"x8" H. & B. belt.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

- 48" Niles car wheel, m. d.
- 48"x16" turning lathe, c. r., sgl. gd.
- 46"x21'6" Fifield, triple geared.
- 38"x25' New Haven, raised to 56".
- 24"x12' Lodge & Shipley, q. c. g.
- 20"x12' Prentice, h. s., c. r.
- 18"x8' Lodge & Shipley, q. c. g.
- 16"x10' Sebastian, h. s., c. r.
- 16"x6' Blaisdell, h. s.
- 14"x5' American speed lathe.
- 16"x5' Jones-Lamson turret lathe.
- 24"x11' American semi-auto. turret.

PLANERS.

- 24"x24"x6' Lodge & Davis, 1 head.
- 24"x24"x8' Chandler, one head.
- 26"x26"x74" Pond, one head.
- 30"x30"x10' American, one head.

DRILLS AND BORING MILLS.

- Burke sensitive bench Nos. 0 & 1.
- 14" Woodward-R. sensitive bench.
- 10" D. Slate sensitive on column.
- No. 3 Prentice port. rope drive drills.
- No. 22 Silver, new, h. p. post.
- 20" Silver, new, plain and bk. gd.
- 20" Foote-Burt mfrs. vertical.
- 24" New Haven plain drill.

HAMMERS, BULLDOZERS AND MILLERS.

- 7000 lb. Morgan double leg steam hammer.
- 1100 lb. Morgan single leg steam.

ENGINES, BOILERS AND PUMPS.

- 5"x5" Erie vertical steam engine.
- 8"x8" Lane horizontal steam engine.
- 4 h. p. Fowler vertical gas engine.
- 40 h. p. Backus horiz. gas engine.

PUNCHES, SHEARS AND PRESSES.

- 50" throat Reade sgl. end punch and shear; massive construction.
- No. 8 L. & A. geared s. e. punch, 3" throat.
- Industrial d. e. punch and shear, 12" throat.
- No. 1-O Doty punch and shear, b. d., 9" throat.
- Niagara No. 24 hand punch, 15" thr.

MISCELLANEOUS.

- Air compressor, s. cyl. 3x5", belted.
- Air compressor, double cyl. 2 $\frac{1}{2}$ "x4", belted.
- Air compressor, Gardner vertical, 4 $\frac{1}{2}$ "x4", b. d.
- Air compressor, 6x6 Laidlaw-Dunn-Gordon horizontal.
- Air compressor, 81' Blaisdell single cyl. horizontal.
- Belting, various widths and lengths, leather.
- Blower, pressure, No. 0 Sturtevant, 3 $\frac{1}{2}$ " outlet.
- Blower, 24' Connorsville rotary pressure.
- Bolt cutter, 1 $\frac{1}{2}$ " Kenyon.
- Chain block, Rounds 1-ton.
- Cold saw, Gliem, 22" dia., cap. 6" rd.
- Cold saw, Newton, 20" dia., cap. 5 $\frac{1}{2}$ " rd.
- Crane, 10' I-beam, 12'3" span, with Harrington 6,000 lb. chain hoist.
- Grinder, Landis, 26"x96".
- Grinder, 10" double end emery, on column.
- Grinder, Diamond 12" d. end bench.
- Grinder, Russell 12" dbl. end bench.
- Grinder, Lancaster 16" d. e. emery.
- Grinder, Barnes 20" wet tool.
- Grinder, 20' Ransom wet tool, 250 volt, d. c.
- Keyseater, 18"x2", No. 2 Baker.
- Lathe, wood, 18"x8' Chapman.
- Motor, 5 h. p. Peerless, 550 volts, d.c.
- Pipe mch., 6" Curtis, engine driven.
- Polishing stand, Diamond No. 2.
- Polishing stand, d. end, 42"x14" arbor.
- Polishing stand, Cuyahoga dbl. end.
- Rip and cut-off saw, 30"x38" Badger.
- Silent chain belt, 16"x8"x14" p.
- Vises, Forges, Tanks Lockers.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,	45 Pearl St., Buffalo, N. Y.
Chucking lathe, 21" P. & J..... \$ 350.	Screw machine, No. 5 W. & S. \$ 375.
Screw machine, 1" x 10" P. & W. hexagon turret..... 250.	Turret lathe, 12" B. & S..... 200.

FOR SALE BY

Machinery Warehouse Co.,	1405 West 37th St., Chicago, Ill.
	POWER CUT-OFF SAW.

1—Power cold cut-off saw, made by the Newton Machine Tool Works, Philadelphia, Pa. Saw arbor is 4" diameter and has travel of about 36". Work is fastened to table which is stationary. Saw arbor is driven past the work. Table is 40" x 40" with 5 "T" slots. Feed mechanism is driven by dial friction, 22" diameter. Screw is 3" diameter. Ways for arbor are 6" wide. Greatest diameter of blade which can be used is about 22" diameter. Greatest depth which can be cut is about 10". In stock, ready for immediate shipment, subject to inspection, or we will furnish rebuilt and condition guaranteed.

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,	541-7 Washington Blvd., Chicago
	54-60 Lafayette St., New York

In Stock At Chicago

NEW

LATHEs,

28" x 13' Chard, d. b. g., q. c. g.
24" x 13' Chard, d. b. g., q. c. g.
20" x 11' Chard, d. b. g., q. c. g.
18" x 8' Cisco, d. b. g., q. c. g.
14" x 6' Cisco, s. b. g., q. c. g., (2).
13" x 5' Lancaster engine.

DRILLING

36" Snyder sliding head.
28" Snyder, sliding head, (3).
25" Snyder, sliding head.
25" Silver, sliding head.
23" Snyder, stationary head, (9).
20" Canedy-Otto, p. f., b. g., (4).
20" Canedy-Otto, wheel and lever.
20" Silver, p. f., back geared.
20" Silver wheel and lever, (2).
No. 101 Canedy-Otto radial, 3 $\frac{1}{2}$ arm.

GRINDERS

No. 3 Modern universal, (5).
No. 1 Norton cutter and reamer, (3).
Metz, tool and surface.
Hacker "All-Angle" Tool Room.
Partridge double end.

MISCELLANEOUS.

Arbor presses, Atlas, all sizes.
Band saw, 10x10 Napier.
Filing mch's., Barry, bench and floor.
Filing machines, Nerco, bench.
Filing machine, motor driven, bench.
Gear hobber, No. 3 Farwell.

USED

Boring mill, 42" King.
Cold saw, Higley, h. s., saw blade.
Cutter and reamer grinder, complete.

16" x 16" Milwaukee, wet tool.

24" Milwaukee, wet tool.

No. A-1-T Grand Rapids, drill.

No. B-2-T Grand Rapids, drill.

No. C-3-T Grand Rapids, drill

Hack saw, 6x6 Peerless.

Hack saw, No. 1 Racine high speed.

Miller, No. 1-B Fox plain.

Miller, No. 2 Cleveland universal.

Punch press, No. 1 Rockford inc.

Punch press, No. 3 Rockford inc.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
711 Lakeside Ave., N. W., Cleveland, Ohio
Branches: Cincinnati, Detroit, Pittsburgh

BROACHING MACHINES.

No. 2 LaPointe broaching machines, (2).

DRILLING MACHINES.

3-spindle Foote-Burt sensitive, power feed.

4-spindle No. 220 Economy sensitive.

No. 24 Baush 6-spindle, stationary table, with $\frac{1}{2}$ " spindle.

Woodward & Rogers 4-spindle sensitive.

Woodward & Rogers 6-spindle sensitive.

GEAR CUTTERS.

36"x9" Gould & Eberhardt, horiz. type, auto., with regular equipment, (2).
No. 2 Whiton automatic, with regular equipment.

GRINDERS.

No. 6 Bryant chucking, with chucks and wheel heads, (6).

Blanchard vertical surface, 30" chuck, direct motor driven, with Westinghouse 440-volt 3-phase, 60-cycle motors, (5).

Garrigus-Bristol grinders, 10" magnetic chucks, (8).

6"x32" Norton plain grinder, with live spindle attachment.

Live spindle attachment for 10"x36" grinder.

14"x36" Norton plain grinder.

No. 205 Rivett, hand oscillating, on pedestals, with countershaft and extra wheel heads, (8).

No. 120 Gardner combination disc grinder, ball-bearing, with 6 discs and disc press, c. s., etc.

No. 24 Bath.

American twist drill grinder.

8" Fairbanks emery grinder.

No. 1½ Landis internal, regular equipment, complete with chucks, (3).

No. 60 Head cylinder grinder.

No. 12 Gardner duplex disc, 18" discs, without wheel press.

20x2" wet grinder.

No. 2 Leland & Faulconer, double wheel wet tool, with 24"x1½" wheels.

LATHES

16"x 8' Flather, with taper attach.

20"x 8' Bradford, (2).

16"x 8' Monarch.

12" Sebastian lathe.

18"x 8' Lodge & Davis, taper attach-

ment and chuck.

14" Reed high duty stud lathes, (2).

14" American lathe.

MILLING MACHINES.

No. 6 Whitney, hand type.

TURRET LATHES.

No. 7 Bardons & Oliver, with cut-off slide, wire feed, tool posts, master collet, countershaft and wrenches.

2" Cleveland automatic, with countershaft.

8" & 10" plain Cleveland automatics, (2).

1"x7" Acme plain chucking machine.

MISCELLANEOUS.

Bench press, No. 18 Bliss inclinable, with Benjamin safety operating device.

Brake, 40" Peck, Stow & Wilcox.

Folder, 72" Niagara.

Piston ring machines, Gridley, plain, with full equipment, (3).

Piston ring machines, Gridley, eccentric, with full equipment, (2).

Piston ring machines, No. 1½ Potter & Johnston, plain, with full equipment, (2).

Piston ring machines, No. 1½ Potter & Johnston, eccentric, with full equipment, (2).

SECOND-HAND MACHINERY

FOR SALE BY

Peninsular Machinery Co.,
 Drill 10" Hoefer, friction disc.
 Drill, 20" Rockford.
 Drill, 23" Rockford.
 Drill, 24" Fosdick.
 Grinder, No. 1 LeBlond universal.
 Grinder, drill and tool, Grand Rapids.
 Grinder, No. 3 Blount, emery.
 Grinder, No. 6 Blount, emery.
 Groover, No. 3 Niagara.

281 E. Jefferson Ave., Detroit, Mich.
 Lathe, 16"x 8' LeBlond, eng., q.c.g.
 Lathe, 17"x 6' LeBlond, rap. prod.
 Lathe, 17"x 8' LeBlond, h. d. auto.
 Lathe, 17"x 10' LeBlond, automobile.
 Lathe, 20"x 10' LeBlond, engine.
 Radial, 3' Fosdick.
 Radial, 3½' Fosdick.
 Shaper, 20" Rockford.
 Shaper, 24" Walcott, crank.

FOR SALE BY

The O'Brien Machinery Co.,
 Bulldozer, No. 4 Williams & White.
 Grinders, Pratt & Whitney vertical
 surface, (2).
 Grinder, Gisholt, cutter.
 Hammers, 50 lb. upright belt, (2).
 Lathe, 16"x 8' Lehmann.
 Lathes, new 18"x 8' Rockford, (5).
 Lathe, 18"x 9' Lehmann.
 Lathe, 26"x 48"x 14' McCabe dbl. sp.
 Lathe, 85"x 18' Bement.
 Pipe mch., 6" Curtis & C., belt dr.
 Planer, 24"x 24"x 6' N. Y. Safety.
 Punch and shear, sgl. end new, cap.
 4x8 flat, 1" rd., punch 1" in 1" iron.

119 N. Third St., Philadelphia, Pa.
 Press, o. b. arch, No. 53 Toledo.
 Punch and shear, dbl. end new, cap.
 punch, 8" in 8"; cap. shear, 1½ rd.
 8x5" flat; weight 3,600.
 Punch press, power, deep throat.
 Rifting mch., horiz. boring or rifting
 wt. about 10,000 lbs.
 Saw, heavy type, cold.
 Shaper, 12' Bement.
 Shaper, 16' Wright.
 Shaper, 16' Smith & Mills, b. g.
 Shaper, 20' Smith & Mills.
 Shapers, 24" Hollingsworth, b. g.
 Spinning lathe, 44" swing, hvy. duty.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.
LATHES.

31"x14' Niles, back geared, (2).
 20"x 8' Putnam.
 19"x 8' LeBlond.
 18"x 8' Pond.

16"x 6' Hamilton, q. c. g.
 16"x 6' Prentice, q. c. g.
 And many others.

TURRET LATHES.

3"x36" Jones & Lamson, (2).
 18" Gisholt.

3"x28" Lodge & Shipley, chucking
 lathe.
 27" Chucking lathe.

7"x14" Potter & J. semi-auto., (2).

DRILL PRESSES.

48" American radial.
 40" Barnes horizontal radials, (2).
 36" Bickford radials, circular base,
 motor driven, (2).

30" Hamilton radial.
 28" Snyder vertical, (2).
 20" Baker high speed heavy duty, (2).
 Style F Baker.

MISCELLANEOUS.

Boring mill, 38" Bearman & Smith.
 Grinder, disc, No. 17 Besly.
 Grinder, disc, 18" Baylon.
 Grinder, No. 14-12"x 5' B. & S. plain.
 Grinder, tool room, Heald univ.
 Grinder, roll, 54"x 10" Diamond.

Milling machine, No. 15 Garvin.
 Milling mch., No. 2A Kempsmith.
 Milling mch., No. 2 B. & S. univ.
 Press, Waterbury-F. horiz., 3" stroke.
 Presses, bk. grd. arch, 8" stroke, (2).
 Press, No. 2g Ferracute.

BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton, with extra knockout plunger, platens 7'2" long
 and 4'2" wide, practically new.
 Shear, 24" Hans Kraut beam, cuts from 3 to 24" beams, H. columns, chan-
 nels and shapes, practically new.
 Steam hammer, Dudgeon, 1,500 lb. capacity.

Large assortment of General Machinery.

Send for complete list.

SECOND-HAND MACHINERY

FOR SALE BY

Industrial Machinery Corp'n., 99 Hoboken Ave., Jersey City, N. J.

Air compressor 12x14 Blaisdell, with unloading valve, used.
Cutting-off machine, P. & W. variable speed, 4 $\frac{1}{2}$ " capacity, used.
Drill, 4-spindle Allen high speed, new.
Grinders, 36" Horner wet tool, used, (2).
Screw machines, Chicago No. 1 automatic and No. 3 automatic, new.
Screw machines, 2" Cleveland model "A" automatics, magazine attachments.
Screw machines, hand, 1 $\frac{1}{2}$ " Newark, new, (15).

FOR SALE BY

Badger-Packard Mch'y. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES,

11"x35' No. 30-E Star.
14"x8' American, standard, s. b. g.,
4-step cone.
16"x8' Flather, quick change

MISCELLANEOUS.

Exhauster, 40" Edwards & Johnson
steel plate left-hand up discharge.
Grinder, No. 2 B. & S. univ cyl.
Grinder, 72" Holmes auto. knife.
Grinder, 12"x42" No. 3 Landis univ.
Grinder, No. 3 Oesterlein "Ohio"
universal and tool.
Hammer, drop, 100 lbs.
Milling mch., No. 6 Brainard, Lin-
coln type, pwr. longitudinal feed.
Milling machine, No. 3 Burke, hand,
with countershaft.
Oven furnace, No. 1 Stewart, with
blower.
Planer, 24"x34"x16' Fitchburg.

18"x8' Fifield, loose chg., s. b. g., 4-st. c.
18"x10' Blaisdell, c. r., solid spdl.
21" Gisholt turret lathe.
24" Pond rigid turret lathe.

FOR SALE BY

FOR SALE BY

**Wm. C. Johnson & Sons Machinery Co.,
1001-3-5 N. Sixth St., St. Louis, Mo.**

LATHES,

14"x6' Hendey.
14"x6' Lodge & Shipley.
15"x6' Von Wyck.
14"x6' Whitcomb-Blaisdell.
16"x8' American.

20"x8' Rahn & Larmon.
22"x22' Old Style.
28"x16' LeBlond.
3"x36" Jones & Lamson.

SHAPERS AND PLANERS.

12", 14", 16", 20" and 24" shapers.
16"x14"x20" planer.

36"x36"x8' Hamilton planer.

DRILLING MACHINES.

16" Elmore high speed.
24" Henry & Wright high speed.
30" Barnes.

22" Barnes, sliding head.
4" arm Bickford radial, almost new.

MISCELLANEOUS.

Beader, No. 8 Niagara.
Holt cutter, 1 $\frac{1}{2}$ " National.
Bulldozer, No. 3 Fisher.
Fox Monitor lathe, Lodge & Davis.
Gear cutter, 26" Cincinnati.
Grinder, disc, No. 2 Gardner.
Grinder, American, twist drill.
Grinder, No. 38, plow-share.
Hammer, 40 lb. Bradley.
Miller, No. 2 LeBlond plain.

Miller, Fox, hand.
Pipe machine, 6" Forbes.
Press, No. 49 Swaine, arch.
Press, No. 52 Ferracute.
Punch & shear, double end, cap. 1"
in 1" has two 25" throats.
Saw, No. 12 Higley.
Screw machine, 1" Pratt & Whitney.
Shear, 10' Niagara, power square.

SECOND-HAND MACHINERY

FOR SALE BY

The Enterprise Machinery Co.,

Boilers, 10 to 150 h. p.
Compressors, 10 to 1000 ft. and pbl.
Disc grinder, 30", like new.
Drill, 4 spindle Dwight slate.
Engines, gas or oil, 3 to 60 h. p.
Engines, steam, 5 to 250 h. p.
Pumps, 10 to 1000 gal. pr. m.
Hammer, Morgan, 1600 lb.
Lathe, 14"x5' Star, 4" h. s.
Lathe, 30"x12", compound rest, \$295.

28-30 S. Clinton St., Chicago

Lathe, 36"x16' hvy. duty trip. b. g.
Lathe, Fox Monitor, 12 hubs.
Miller, vertical, 5"x18"x9", \$125.
Miller, hvy., No. 3 and vert att.
Miller, Lincoln No. 2, good cond.
Planer, 36"x36"x12" \$900.
Radial, 42" No. 5, taper, good cond.
Roll, 4" cap., 10", belt drive.
Screw machine, auto., 5/16", \$975.
500 Other tools. Write for list.

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES.

10"x4' Prentice, h. s., c. r.
13"x7'6" new Carroll-J., pln. chg.
14"x6' new Carroll-Jamieson, q. c.
15"x6' new Sidney, q.c., swings 17".
16"x8' Hendy, q. c., taper attach.
16"x24" new Rahn Larmon, d.b.g., q.c.

17"x8' new Sidney, q. c., swings 19".
19"x8' new Sidney, q. c., swings 21".
20"x12' Hendy, q. c., taper attach.
25"x16' new Sidney, q. c., swings 27".
28"/48"x14' Harrington extension.

TURRET LATHES.

2"x24" Jones & Lamson, cone head,
complete.

24" Davis chucking.
No. 1 Bardons & Oliver, screw.

VERTICAL BORING MILLS.

69" Bullard, two heads.

36" Newton, car wheel.

64" Niles, two heads.

PLANERS.

36"x36"x8' Gray, two heads.
30"x27"x8' Smith, one head.

27"x23"x6' Smith, one head.
18"x8"x3' Wheeler, one head.

SHAPERS.

16" new Steptoe, b. g.
20" new Steptoe, b. g.
24" new Steptoe, b. g.

24" Hendy.
16" Bement, traveling head.
16" Barker, traveling head.

MILLING MACHINES.

No. 1 Kempsmith universal.
No. 1 Cincinnati universal.
No. 1 new American, plain.

No. 0 Steptoe, hand, new.
No. 2 Burke, bench, p. f.

GRINDERS.

No. 1 Fraser universal, new.
No. 6 Coates, new univ. cutter and
reamer.
No. 1 Grand Rapids, new cutter and
reamer.

No. 1 Landis.
No. 2 Grand Rapids, new cutter and
reamer.
No. 190 Wells.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Grand Rapids Specials

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trip. b. g.
ba., \$125.
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wings 21".
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wings 27".
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Air compressors, 4½x5 Ingersoll-Rand, (2).
Boring mills, vertical, 34".
Drill, 26" Sibley, sliding head.
Drill, 28" Hamilton, sliding hd.
Drill, No. 2 Quint 6-sp. turret.
Elect. tool post grinder, No. 2
Willsey, 110 v., 60 c., 3 p.
Gear cutter, 36" G. & E., spur.
Grinder, Greenfield, cutter.
Groover, No. 518 P.S. & W., pwr.
Hack saw, No. 1 Racine.
Hack saw, No. 5 Marvel.
Hammer, 50 lb. Little Giant, pwr.
Hammer, Smith auto., power.
Lathe, 16x8 Bogart standard.
Lathe, 18x8 Greaves-K. standard.
Lathe, 18x10 Cinti. standard.
Miller, No. 38 Chicago, hand.
Miller, No. 3 heavy, plain.
Millers, No. 1-C Fox plain, (2).
Miller, No. 25 Bilton plain.

Miller, No. 1½ Valley City plain.
Molding mch., portable, Arcade.
Presses, No. 2 Consolidated inclinable, (2).
Press, No. 3 Consolidated incl.
Press, No. 10 Excelsior, foot.
Punch press, No. P-3 Ferracute.
Rolls, drawing & forming, Port Huron.
Riveter, No. 0 Cleveland electric.
Rolls, power forming, No. 400 P. S. & W.
Roll fd. for D-3 Ferracute press.
Screw mch., 4" American, hand.
Setting-down machine, No. 564 P. S. & W., power.
Shear, No. 16-P Len., throatless.
Shear, cir., No. 278 P. S. & W.
Turret lathe, 18" Prentice, gd. hd.
Wall radial, No. 51 Canedy-Otto.
Welder, spot, No. 140 Toledo.
Welding outfit, acetylene.

Ask for Complete List

McMullen Machinery Company

"Everything in Shop Equipment"

Grand Rapids, Mich.

Used Machine Tools for Immediate Delivery

1-30" Bullard Vert. Bor. Mill, with 1-6 hole tur. on rail. 80% new.
1-20" Foote-Burt Heavy Duty Drill, single pulley drive. 90% new.
2-24" Barnes all geared drills, 95% new.
2-Spd. Henry & Wright High Speed Ball Bearing Drills. 70% new.
1-25" W. F. & John Barnes Sliding Head Drill Press, with W. and L. G. and P. F.—B. G. and Tapping Attachment. 80% new.
1-6" Bickford Radial, arranged for variable spd. motor dr., 60% new.
1-No. 1 Adams Automatic Gear Hobber, 65% new.
1-No. 3-26" Brown & Sharpe Automatic Gear Cutter, 90% new.
1-24" Fellows Automatic Gear Shaper, 65% new.
2-36" Fellows Automatic Gear Shapers, 65% new.
1-12x36 Landis Universal Grinder, 70% new.
1-No. 12 Modern Plain Grinder, complete, with special attachments for internal and external grinding, 80% new.
1-No. 2 Mitts & Merrill Keyseater with special equipment, 90% new.
2-16" Warner & Swasey Universal Fox Turret Lathes, with set over tail stock. Chasing Bar with hobs and chasers. 90% new.
1-50x22 Pittsburg Lathe, tr. grd. Swings 51½". Taper att. 70% new.
1-26x26x6" Gray Planer, with 1-head on the cross rail. 90% new.
1-No. 17 Williams & White double end compound punch and shear with a number of attachments, 95% new.
1-6" Nicholson-Waterson Horizontal Cylinder Boring and Facing Machine, Motor Driven.

M. J. Walsh Mch. Co., 141 Sycamore St., Milwaukee, Wis.

New Boston Show Rooms
W. H. J. Fitzgerald & Co.
30 Oliver St., Boston

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity $\frac{3}{8}$ " to $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity $\frac{5}{8}$ ".

These machines are in A-1 condition.

Six $\frac{1}{4}$ Inch Automatic Screw Machines
(Stehli Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

We have the following used equipment.
It's attractive in price. Machines below are a few suggestions from our large stock.

Lathes

- Flather 20"x10", compound rest.
- Gisholt 21" turret lathe.
- LeBlond 25"x10", heavy duty.

Milling Machines

- Cincinnati No. 1½ plain b. g.
- Garvin No. 14 plain b. g.
- Brown & Sharpe No. 2 plain b. g.

Shapers

- Ohio 20" crank shaper.
- Cincinnati 24" back geared crank.
- Fitchburg 14" traverse head.

Screw Machines

- Southworth No. 2 hand screw machine, 1" cap.
- Brown & Sharpe No. 0-G, automatic.
- National-Acme No. 54 automatic.

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The Machinery Exposition of America!!!

250 Ton Mesta Steam Hydraulic Quick Acting Forging Press, Single Frame Type, Good As New, *Immediate Delivery*, full particulars on application.

We have every MAKE, SIZE and DESCRIPTION of Machine Tools and Metal Working Machinery.

Over 500 MACHINES on hand for IMMEDIATE DELIVERY

The following are merely selections at random:—

- 14' Standard Vertical Boring Mill, two swivel heads.
- 84" Sellers Vertical Boring Mill, two swivel heads.
- 52" Bridgeport Bullard Vertical Boring mill, two swivel heads.
- 36" Niles Vertical Boring Mill, two swivel heads.
- 36" Baush Vertical Boring Mill, two swivel heads.
- 5" Barrett Horizontal Cylinder Boring Machine, almost new.
- 3" Rochester Horizontal Boring Mill, belt driven.
- 10' Bement & Sons Boiler Plate Rolls.
- Two (2) 16"x8" Reed Prentice Engine Lathes.
- 30"x12" Israel Johnson Engine Lathe, triple grd., face plate dr.
- 30"x24" Lodge & Shipley Engine Lathe, quick change gear, etc.
- 32"x17" Pond Engine Lathe, triple geared, face plate drive.
- 38"x14" Fay & Scott Engine Lathe, heavy, good as new.
- 48"x20" Fifield Engine Lathe.
- 50"x20" Pond Engine Lathe, triple geared, face plate drive.
- 52"x22" Wood Light Engine Lathe, geared, face plate dr., hvy.
- 10" New Haven Slotter, circular table.
- 30" Bullard Draw Cut Slotter.
- 48"x36"x16" Detrick & Harvey Open Side Planer, three heads.
- 28" Hendey Shaper.
- 3' Gang Radial Drill.
- 6' Baush Radial Drill.
- 6' Bickford Radial Drill, tapping attachment.

Write For Catalogue

Graves Machinery Exchange

Warehouses and R. R. Siding:
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Engine Room Equipment

- One 4½" x 2¾" x 4" Gardner Duplex Steam Pump.
- One 5" x 2½" x 6" Whitter Duplex Steam Pump.
- One 14" x 36" Allis-Chalmers Corliss Steam Engine.
- One 66" x 14" Freeman Horizontal Tubular Boiler.
- One 30" x 6' Buffalo Closed Pattern Purifier.
- One 24" x 6' 8" Open Pattern Feed Water Heater.
- One 22" x 69" Allis-Chalmers "Reynolds" Closed Pattern Feed Water Heater.

Badger-Packard Machinery Co.

133-139 W. Water St.,

Milwaukee, Wis.

First Class Used Machinery IMMEDIATE DELIVERY

- 36" x 36" x 24' L. W. Pond Planer, two heads on cross rail.
- Landis 12" x 66" Plain Grinder with Universal Headstock.
- Landis 10" x 30" Plain Grinder with Universal Headstock.
- 2—Brown & Sharpe No. 3—26" Automatic Gear Cutters.
- 24" Cincinnati High Speed Shaft Driven Upright Drill with gear box and tapping attachment.
- 15 H. P. Monitor Planer Control without Motor, 110 volt, D. C., First Class Condition.

D. C. MOTORS

1—7½ H. P. Westinghouse.....	220 volt constant
1—5 H. P. Reliance.....	220 volt constant
1—¾ H. P. General Electric.....	110 volt variable

The Lodge & Shipley Mch. Tool Co.
Cincinnati, Ohio, U. S. A.

Look Over This Exceptional List

First Class Machine Tools

Immediate Delivery

1-33"x33"x10' Knecht (Bickett) Planer, 4 heads,	\$3750.
1-30"x30"x12' McFarland Planer, single head,	1200.
1-37" American Vertical Boring Mills, 2 heads	2750.
1-Lucas Horizontal Boring Mill, 2½" Bar	3500.
1-30"x30"x8' Powel Planer, 1 head	1350.
1-No. 3 Long & Allstatter Heavy Geared Punch, 21" throat capacity 1"x1".	1350.
1-No. 57 Sellers Heavy Grd. Punch, 34" throat, 1¼"x1¼"	2200.
1-Wais & Roos Combination Angle and Splitting Shear; cuts 4"x4"x½" angles and splits ½" plate,	900.
1-Heavy Beveling Shear, capacity ¾" plate,	350.
1-Set 84" Bending Rolls, capacity ¾" plate,	1350.
1-350 ton Niles Hydraulic Wheel Press, 84" capacity,	2200.

RADIAL DRILLS.

- 1-4' American plain, g. b. drive.
- 1-5' Dresses plain, g. b. drive.
- 1-Heavy duty Baker drill, g. b. drive, Style 2 M.

AUTO. TURRET LATHES.

- 1-2" P. & W., geared head.
- 2-2x24 J. & L., geared heads.
- 3-3x36 J. & L., geared heads.
- 4-2"x24 Pratt & Whitney, grd. hds.
- 1-2" Cleveland automatic, 5 hole.
- 1-24" Cleveland auto., Model A.
- 1-14" W. & S. Turret.

MILLING MACHINES.

- 2-No. 2 Cincinnati universal.
- 2-No. 4 Cincinnati plain.
- 1-No. 3 B. & S. plain, s. p. drive.
- 1-No. 4 Cincinnati vert., s. p. drive.
- 1-No. 1 B Milwaukee plain, s. p. dr.
- 1-No. 2 B Milwaukee plain, s. p. dr.
- 1-No. 2 A Milwaukee plain, s. p. dr.
- 1-No. 2 B hvy. pl. B. & S., s. p. dr.
- 1-No. 2 Brown & Sharpe plain.
- 2-No. 1 V Brown & Sharpe.
- 2-No. 10 Pratt-W. hand millers.
- 1-No. 3 B. & S. vertical, s. p. drive.

ENGINE LATHES.

- 1-12"x6" Reed.
- 1-14"x6" LeBlond, quick change.
- 1-14"x6" Pratt & Whitney.
- 1-14"x6" Lodge & S. patent head.
- 1-14"x6" LeBlond, quick change.
- 1-18"x8" LeBlond.
- 1-20"x8" L. & S., qck. ch. tap. att.
- 1-20"x10' American, d. b. g., tap. att.
- 1-20"x10' Bridgeport, taper attch.

SHAPERS.

- 1-16" Smith & Mills, crank.
- 2-20" Stockbridge, B. G. Crank.
- 1-20" American, b. g. crank.

BROACHING MACHINES.

- 3-No. 3 A Lapointe.

GEAR CUTTERS AND HOBBERS.

- 1-No. 4 48" Brown & Sharpe auto.
- 1-No. 3 26" Brown & Sharpe auto.
- 1-No. 13 B. & S. spur and bevel.
- 2-No. 6 Lees Bradner auto.
- 1-No. 4 36" Cincinnati auto.
- 1-36" Fellows Gear Shaper.
- 1-24" Schuchardt & Schutte.
- 3-Ingle Tooth Rounders.

GRINDERS.

- 3-No. 70 Heald, internal.
- 1-No. 60 Heald, internal.
- 1-No. 3 B. & S. universal.
- 1-No. 2½ Bath, universal.
- 1-10"x30" Norton, plain.
- 4-10"x30" Landis, plain.
- 2-6"x48" Pratt & Whitney, plain.
- 1-12"x32" Landis, plain.
- 1-12"x24" Modern grinder.
- 1-10"x24" Landis, plain.
- 2-6"x32" Norton, plain.
- 1-3" P. & W. vertical surface grinder with magnetic chuck.

AIR COMPRESSORS.

- 1-13"x8"x12" Curtis vert. dbl cyl.
- 1-14"x9"x8" Herron & Burry horizontal double cylinder.

BOLT THREADING.

- 1-14" Howard.

MULTIPLE DRILLS.

- 1-4 Spindle Barnes, 22", b. g. & p. f.
- 1-4 Spindle Barnes sensitive.
- 1-3 Spindle sen., Taylor & Fenn.
- 1-No. 4 32-spindle FOX.
- 1-No. 3 FOX with 6 spindles.
- 1-2 Spindle Allen sensitive.
- 1-6 Spindle Detroit sen. horizontal.

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Planers

18-22-26-30-32-36-42-54-60" between housings; 1-2-3 and 4 heads.

Vertical Boring Mills

30", 36", 52", 76" and 10'.

Horizontal Boring Machines

24", 3", 4"; also 5" Barret type.

Radial Drills

2½", 3 and 6'—Plain and Universal.

Upright and Multiple Drills

12"-24"-36" and 42"; also 3 and 6 spindle.

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Various sizes from 16" to 102" swing, 6' to 40' beds.

Turrets

2x24", 20x6", 20" also 34".

Milling Machines

48x36x14' Ingersoll 4 heads; 20"x7" Brainerd.

36" Shaper; 54" Slotter.

Also Punches and Shears, Gear Cutters, Grinders, Hammers, Presses, Cranes, Bolt and Pipe Machines

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G. L. Bennett Machinery Co., Inc.
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NEW MACHINE TOOLS USED

Complete Lines Carried In Stock

LATHES

MILLERS

SHAPERS

PLANERS

GRINDERS

GEAR CUTTERS

DRILLS

INDUSTRIAL FURNACES, BLOWERS PYROMETERS

*Inquiries from manufacturers and consumers
of MACHINE TOOLS respectfully solicited*

CARPENTER & WOODWARD, Inc.
233 BROADWAY, NEW YORK, N. Y.

Immediate Shipment

7"x30" CANTON, Semi-Precision Lathe, 3 step cone, back grd., compound rest, screw cutting, change gears. Good as new.

15"x 6" GLOBE Engine Lathe, C. R., C. S., etc., NEW.

15"x 8" GLOBE Engine Lathe, C. R., C. S., etc., NEW.

14"x 6" CHAMPION Double Head Lathe.

20"x10' FLATHER, Q. C. G. Engine Lathe, chucks, tools, etc.

38"x24' Niles-Bement-P., Triple Geared, Motor Driven, Variable Speed Motor, Q. C. G., Taper Att., 18' centers. A-1.

96"x32' Triple Geared, Face Plate Dr. Engine Lathe, 21' centers.

No. 1½ VALLEY CITY Full Universal Milling Machines.

No. 1½ VALLEY CITY Plain Manufacturing Millers.

No. 8 KEMPSMITH, Plain Manufacturing Miller.

PRATT & WHITNEY, 8 Spindle Multiple Drill, Cap. 1" drills, working from 12" to 30" 30"x48" table. Good condition.

No. 6, FOX, 20 Spindle Multiple Drill.

2½ CARLTON, Sensitive Radial Drill, Good as new.

Large Stock Sensitive, Stationary Hd. and Sliding Hd. Drills.

20" SMITH & MILLS Crank Shaper, Very Good.

20" KELLY, Back Geared Crank Shaper.

15" KELLY, Geared Crank Shaper.

Slitting Shear, LENNOX, ¾ cap., Dbl. Housing Type, 72" Thrt.

Bevel Shear, WANGLER, 1" cap., either Belt or Motor Driven.

72" Pyramid type Power Bending Rolls, SCULLY, cap. 1" A-1.

26" Vertical Boring Mill, CINCINNATI, Turret Head, Universal

Chuck Table, Geared Feeds.

NILES, Horizontal Boring, Drilling and Milling Machine, 4" bar, compound table, bores to center of 60" motor driven. First class cond.

No. 5-B, Vertical Milling Machine, BECKER, With Power Rotary table, Late Type.

Drawing Press, No. 4 DDG, FERRACUTE, Dbl. Acting, B. G.

No. 15 STOLL, Inclinable Power Press.

2-No. 14, STOLL, Inclinable Power Presses.

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Grinder, No. 1 LANDIS, Universal, cap. 10"x24". A-1.

Large Stock Double Emery Grinders, Wet Tool Grinders, Etc.

Miscellaneous Equipment

No. 1 LAPointe Broaching Machine.

CLEVELAND, 4" Automatic Worm Miller.

GRANT Motor Driven Rivet Spinning Machine.

1" NATIONAL, All Steel, Wedge Grip Bolt and Rivet Header, new.

No. 1 GARVIN Automatic Tapping Machine.

9"x8" INGERSOLL RAND Belt Dr., Sgl. Stage Air Compressor.

15 h. p. FAIRBANKS-MORSE Horizontal Gas Engine.

WESTINGHOUSE Motor Dr. Dbl. Emery Grinder on Column.

CLAYTON Duplex Steam Dr. Air Compressor, cap. 350 cu. ft.

We also have a good stock of Sheet Metal Machinery, Woodworking Machinery, Spot Welders, etc.

Send Us Your Requirements. Send Us List of Your Idle Equipment.

D. M. Osborne Machinery Co.

Salesroom 221 St. Clair Ave., N.E., Cleveland, O.

The greater meaning of Good Tools was never more manifest than right now—

In this list offered for Immediate Shipment
Both NEW and USED

**NEW PUNCHES AND SHEARS, SINGLE
END (INTERCHANGEABLE) FOR**

IMMEDIATE SHIPMENT

NEW CRANK-MOTION SHAPERS

"Throat. Weight 30,000 lbs.
"Throat. Weight 40,000 lbs.
anchoring capacity: 2" hole thru 1" Tube
and Manholes 13 $\frac{1}{2}$ " x 27 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ "
bearing capacity: 1 $\frac{1}{2}$ " Plate; 2 $\frac{1}{2}$ " round 8x
1 $\frac{1}{2}$ " flat bars, 6 $\frac{1}{2}$ " angles.

Note on each Louising complete with counter shaft or a number of improved leaf-springs not found on any other planer type

HYDRAULIC RIVETER

Chambersburg built, a gap, with overhead Crane, Hoist, Accumulator, Pump and complete outfit; still set up as it had been used.

BENDING ROLLS
Wickes Bros., 14' 3" between housings—
Top Roll 14" diam. counterbalanced,
raised and lowered by power, Lower
Roll 10" diam. from end housing. Max.

Kons¹⁰ diam. Proprietary housing, motor-driven, with Motor and Controller complete.

BORING MACHINES

Horizontal 3' bar, Fitchburg B. & S., Turret head.
Upright, 36" sawing, B. & S., Turret head.
Car-wheel Borer, 42", swinging, Bement-Miles.
Car-wheel Borer, 54" sw., Niles Tool Wks.

PLANERS 54" x 12" Pond, 4 Heads.
42" x 8' New Haven, 1 Head
32" x 10' New Haven, 1 Head
30" x 6' Pond, 1 Head

OTHER TOOLS	
Shaft Straightener, up to $\frac{4}{3}$ " diam., 25' length, Mardat.	
Nut Tapper, 6-spindle, A cane.	
Cutter-off Machine, 10" cap., Beemont, Collier.	
Gas Engine, 15 H. P., Fairbanks-Morse, Boring-bar, $\frac{4}{3}$ " diam., 8" long with sliding head and inserting screw.	
GRINDERS	

OTHER TOOLS

shaft straightener, up to 45°-diam., length, M-eariar, Nut Tapper & spindle, 10 ft. cane. Cutting-off Machine, 10 ft. can. Bent. Collet, 10 ft. can. Gage, 10 ft. can.

GRINDERS
Gas Engine, 15 H. P., Fairbanks-Morse.
Boring-bar, 44" diam., 8' 6" long with sliding head and insert screw.

3-25" stroke, Back-gearred.	top Koli II driven.
3-25" stroke, Spd.-box, Single Pulley Dr.	BOILER-PLATE PRESS
4-32" stroke, Spd.-box, Single Pulley Dr.	Bevel-Shears—"Lennox" Rotatory, 1" cap. Punch—14" Throat, 1" capacity. Punch—Portable, Pels.
one on each housing, complete with counter-shaft or arranged for motor drive. Equipped with a number of improved features not found on any other planer type Milling Machine built.	HORIZONTAL PUNCH "Hilles & Jones," 60" gap, capacity 3½" hole thru plate. Weight 66,000 lbs. Arranged for motor—no motor.
NEW RADIAL DRILLS 6-24" Arm, Speed-box, Tapping att. 2-3" Arm, Cone-drive, Tapping att. 2-3" Arm, Speed-box, Tapping att. 3-3½" Arm, Speed-box, Tapping att. 5-4" Arm, Speed-box, Tapping att.	PLATE PLANNER 18' between housings; capacity for planing plates 14" in length at each setting; open-end housing so any length plates can be planed by re-setting.
NEW LATHEES, STOCK ABSOLUTELY IN STOCK	LATHES 3-21" x 12' 5-16" x 6" 4-16" x 8" 2-16" x 10" 10-18" x 10" 6-18" x 12" 3-18" x 14" 3-21" x 10" And a few McCabe "2-in-1", DOUBLE SPINDLE LATHEES— 48" and 26" swing, 24" bed, 18' between centers, 32" bed, 16' between centers, Covering the capacity of TWO complete Lathes on the ONE bed. These two long bed Lathes built on order for Government contracts, but now available for IMMEDIATE SHIPMENT.
one on each housing, complete with counter-shaft or arranged for motor drive. Equipped with a number of improved features not found on any other planer type Milling Machine built.	AIR RIVETER "Albee" type, Portable style, 19" gap, Cylinder 12" x 12", capacity 1½" rivets.
3-25" stroke, Back-gearred.	Nut Tapper, 6-spindle, Acme, 6-cap., Bassett, Cutting-off Machine, 10" cap., Bassett, Four-spindle, Bassett.
3-25" stroke, Spd.-box, Single Pulley Dr.	Gas Engine, 15 H. P., Fairbanks-Morse Boring-bar, 44" diam., 8 6/7" long with sliding head and inserter screw.
4-32" stroke, Spd.-box, Single Pulley Dr.	GRINDERS Universal, swings 12½", between, Landis, Universal, swings 12½", 246" bet., Iroquois, Heavy Roll Grinder.
5-4" stroke, Spd.-box, Single Pulley Dr.	Planer type Surface Grinder, 26" between housing, 8" Table, Springfield, Plain Grinder, sw. 10' x 30", bet., Bridgeport, Small Grinders—varied assortment.
6-21" stroke, Spd.-box, Single Pulley Dr.	MILLING MACHINES (Seven) "Cincinnati", No. 3, Plain, Tables 52" x 12" longitudinal feed 34", (Two) "Brainard", Plain, Tables 48" long, 14" wide, "Newton" Milling Machine, Horiz. and vertical head, Table 60" x 12", (Ten) Lincoln type Milling Machines, Tables 28" x 12". (New) Planer type Milling Machine.
7-24" stroke, Spd.-box, Single Pulley Dr.	GEAR CUTTERS Gear Shaper, 36" Fellows, with Cutters, Gear Planer, 24" Gleason, complete.
8-26" stroke, Spd.-box, Single Pulley Dr.	DRILLS Upright, 36" Swing, Snyder. Radial, 24" Arm, Fosdick. Radial, 6" Arm, Niles. Four-spindle, Niles, Table 8' long.
9-28" stroke, Spd.-box, Single Pulley Dr.	TURRET LATHES 28" swing, rigid type, 4" hole rapid traverse. 21" swing, Gisholt, gap style, 1½" hol. spdl. 20" swing, Potter & Johnson, 2" hol. spdl. 32" Flat Turret, Jones & L., Grd. Hd.
10-30" stroke, Spd.-box, Single Pulley Dr.	SHAPERS 12, 14, 16 and 20" stroke, various makes.

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1—100 h. p.— G. E. Slipring — 720 r. p. m.
4—50 h. p.— G. E. KT — 900 r. p. m.

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10—15 h. p.— G. E. KT — 750 r. p. m.
5—30 h. p.— G. E. KT — 750 r. p. m.
5—50 h. p.— G. E. KT — 750 r. p. m.

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5—15 h. p. 230 volt, 800 r. p. m. "RC" G. E. Motor complete with controllers.

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HONEST SERVICE

NEW MACHINES

No. 22-B Demco Floor Type Drill Press, two spindle.
No. 32-B Demco Floor Type Drill Press, three spindle.
14"x6' Champion Q. C. Lathe with taper attachment.
No. 4½ Bardons & Oliver Hand Screw Machines, complete with power feed to cut-off, power feed to turret and regular equipment.
No. 2-B Washburn Shops single spindle Drill.
Webster & Perks No. 1 and No. 2 Floor Type Grinders.
No. 2 Grand Rapids Universal Grinder.
6x6 Peerless High Speed Metal Saw.
No. 2 Toledo and No. 4 Defiance Hand Screw Machines.
Simmons Premier Universal Tool and Cutter Grinder.

USED MACHINES

No. 2 Brown & Sharpe Chucking Machine.
48" Newton Portable Slotter.
60"x8' Newton Rotary Planer.
Newton Horizontal boring Mill, for spindle.
No. 1 two spindle Garvin Tapping Machines.
12"x6" Gould & Eberhardt Gear Hobbers.
24"x12" Gould & Eberhardt Gear Hobbers.
No. 3 Brown & Sharpe Gear Cutters, 26" and 36".
No. 2 J. N. Lapointe Tool Co., double broaching machines.
W. & S. Hollow Hex. Turret Lathe, bar and chucking, good cond.
No. 1 Brown & Sharpe Automatic Screw Machine.

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- 1-24" x 24" x 6' Hamilton.
- 1-24" x 24" x 6' American.
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- 1-60" x 23' New Haven Triple Grd.
- 1-60" x 16' Fifield.
- 1-26" x 20' New Haven.
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- 1-16" x 6' Walcott & Wood.
- 1-14" x 6' Fitchburg.
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- 1-2" x 24" Jones & Lamson.
- 1-1 1/2" American Screw.
- 6-24" Gisholt.
- 1-24" No. 9 Foster.
- 1-22" Steinle.
- 4-21" Gisholt.
- 1-18" x 6" Lodge & Davis Cabinet
Turret.
- 1-13" Foster.
- 1-12" Foster-Kimball.

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- 1-5' Universal Radial.
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- 1-6" bar Sellers Cylinder Borer.
- 1-Beaman & Smith Duplex Cylinder Boring and Milling.
- 1-34" Bullard.

MILLING MACHINES

- 1-No. 4 Beaman & S. Open S. Vert.
- 1-No. 15 Garvin Plain.
- 2-No. 32 Kempsmith Lincoln.
- 2-No. 14 Garvin Plain.
- 2-No. 14 Garvin Plain Mfg.
- 1-No. 1 Cincinnati Plain.

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- 1-11" Gleason Generator.
- 1-No. 2 Robey-Smith Bevel Planer.
- 1-No. 1 Robey-Smith Bevel Planer.

GRINDERS

- 1-Wells Cutter Reamer.
- 1-No. 1 1/2" Landis Internal.
- 1-4" x 20" Morse.
- 1-6" x 30" Norton Plain.

MISCELLANEOUS.

- 1-No. 3 Lapointe Broaching Mch.
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No. 117 Moline heavy single spindle, (2).
Allen four spindle high speed ball bearing, New.

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48" Gould & Eberhardt spur gear cutter, heavy type.

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15"x6" Johnson, comp. r., taper. 32"x16" Fay & Scott, c. r., turret
16"x6" Fifield, rise and fall rest. on shears, turret tool post.
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24"x7", with turret on shears. triple geared, faceplate.

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crank.

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6-spindle Gardam.
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23" Rockford, sliding head, 1" chuck fitted.
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10x36" Norton.
No. 4 Van Norman internal.
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No. 6 Bryant internal.

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Rivett swivel miller.
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No. 2 Pratt & Whitney, Lincoln miller.
No. 2 Pratt & Whitney hand.
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30"x20"x 4' Pease.

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4" style "A" Cleveland auto., (2).
7" Cleveland automatics, (32).
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1" Rivett, wire feed.
1" Pratt & Whitney.
1" National Acme automatic.
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2x10 Cincinnati.

1 No. 2 Whiton.

MISCELLANEOUS.

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Cutting-off machine, 6" Huribut & Rogers.

Keyseater, No. 1 Davis.
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- 1—No. 10 Bryant Chucking Internal Grinder.
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- 2—No. 2 P. & W. Single Spindle Die Sinkers.
- 1—18,000 lbs. Waterbury-Farrel S. S. Trimming Press, geared with side shear.

We also carry in stock Steam Pumps, Electrical Equipment, and are in the market to purchase equipment of all kinds.

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Telephone, Edgewood 1582

Some Real Bargains

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50"	tbt. sgle. end	1 1/4 x 1 1/4 cap.	12"	tbt. dble. end	1 x 1 cap.
42"	tbt. sgle. end	1 x 1 cap.	7 1/2"	tbt. dble. end	7/8 x 3/4 cap.
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34"	tbt. sgle. end	1 x 1 cap.			

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- 1—Used 24"x12' LeBlond (Good as new).
- 1—Each (New) Sidney Heavy Duty 27", 25", 19", 17" and 15" by 6', 8', 10', 12' and 14' beds. All 3-Step Cone D. B. G., Q. C.

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Dries & Krump (Hand) 8 ft. for 16-Gauge.
Scully (Power) 8 ft. for 3/16 Iron.

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- 1—Butt Welder "National" 7/8" x 7/8" Cap. 220-Volts, 60-Cycle.
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We have five hundred machines on our floor.

Send us your inquiries.

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Some Real Bargains

Punches & Shears

50" tht. sgle. end	1¼x 1¼ cap.	12" tht. dble. end	1 x 1 cap.
42" tht. sgle. end	1 x 1 cap.	7½" tht. dble. end	7/8x ¾ cap.
36" tht. sgle. end	1 x 1 cap.	6" tht. dble. end	5/8x ¾ cap.
34" tht. sgle. end	1 x 1 cap.		

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Brakes

- Dries & Krump (Hand) 8 ft. for 16-Gauge.
- Scully (Power) 8 ft. for 3/16 Iron.

Bulldozers

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Welders

- 1—Spot Welder "Vollans" Type K. S. 220-Volt, 60-Cycle.
- 1—Butt Welder "National" 7/8" x 7/8" Cap. 220-Volts, 60-Cycle.
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We have five hundred machines on our floor.

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The "New Britain"
Bench-Type Drop-Head
Polishing & Buffing Machine



Belts from below. Insures freedom from belt dangers. Down-draft of the belt against main bearing results in smooth running regardless of lost motion.

The top of machine is hinged at the rear, to permit of raising or lowering. Starts and stops instantly by a single movement of the self-locking lever. No clutches, idlers, loose pulleys or shifting belts.

Built like a machine tool, for quick control and for smooth running at high speeds without vibration and with the least consumption of power. Economizes floor space. Saves belts. Meets all safety and hygienic requirements.

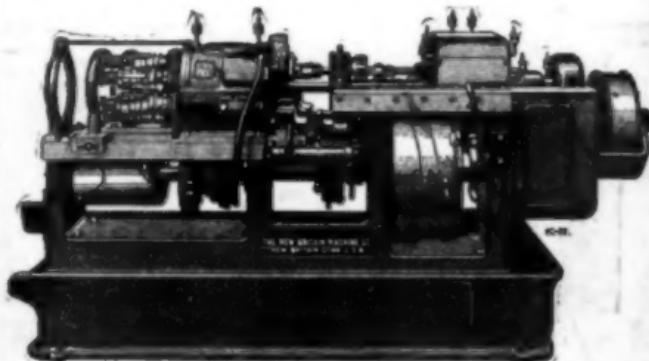
*Write for Folder 1226 for complete
description and further illustration*

THE
**New Britain Machine
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"New Britain" Six-Spindle Automatic Screw Machine

Increases Output 50 to 200%
And Saves Cost in Proportion



Six spindles, like six pairs of hands, will easily do some kinds of work complete which a fewer number cannot do at all without further help or rehandling.

Six spindles, like six pairs of hands, permit a greater subdivision of simpler work, so that it can be finished in much less time.

Six spindles, *unlike* six pairs of hands, cost no more to operate than a fewer number. The machine draws no wages. It is like employing six men at the cost of three, or four, or five, insuring a much greater output without adding to the daily expense.

*But that is not the only point of superiority
Write for further particulars and proofs*

The New Britain Machine Company

Automatic
Screw and Chucking
Machines



New Britain,
Connecticut,
U.S.A.

